



IJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8

Issue: III

Month of publication: March 2020

DOI:

www.ijraset.com

Call:  08813907089

E-mail ID: ijraset@gmail.com

Implementation of Chit-Fund using Blockchain

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Abstract: A chit fund system contains a group of users, called subscribers. The Chit fund organizer or a company, brings the group of people together and monitors the activities of the group. For this reason, the organizer is either gets compensated every month or at withdrawal time. (The fee may be omitted in informal situations.) The fund starts at an announced date and continues for the number of months equal to the number of subscribers. Each month, the subscribers put in their monthly installments into the pot. Then, an open auction is conducted to determine the lowest sum a subscriber is willing to take that month. For example, if the monthly installment is Rs.1000 and there are 50 members, the pot in the first month will contain Rs.50,000. If the auction determines a winner who is willing to accept Rs.45,000 for that month, the surplus Rs.5,000 is distributed to the other 49 members, after subtracting fees paid to the organizer. The subscriber who won the auction was able to access Rs.45,000 in the first month and the others benefited in their share of the Rs.5,000 surplus. The process gets repeated on its own, giving the auction amount to one user every month. All of the other users, including those users who took their share in a previous month, also continue paying the monthly installments. It works as a savings account, because each user contributes every month and may retrieve a large sum in the future whenever he wants while receiving their share of the surpluses amounts. Variations of the system can omit the bidding part, instead selecting a winner by choosing a chit out of a box.

Index Terms: Block-chain, Smart contract, chit- fund

I. INTRODUCTION

Block chain is the backbone Technology of Digital Crypto Currency Bit Coin. The block chain is a distributed database of records of all transactions or digital event that have been executed and shared among participating parties. Each transaction verified by the majority of participants of the system. It contains every single record of each transaction. Bit Coin is one of the most popular examples of crypto currency of block-chain. Block-chain Technology saves the Transaction in Digital Ledger which is not centralized and distributed over the Network thus making it more secure. Anything of value like Land Assets, Cars, etc. can be recorded on Block-chain as a Transaction.

II. OBJECTIVE

Formal financial services like Insurance, Trading, Equity, Mutual funds, Loans are difficult to understand and work with for the majority population. Chit Funds have been playing an important role in the financial inclusion of India. Two main problems in this are, having faith and trust on the organizers of this process and challenges in monitoring it. We plan to use the Block-chain technology to decentralize these financial services space and bring trust and transparency in the Chit Funds. As the registered chit fund system is safe and secure, more people will prefer to go to a regulated authority for chit funds. There are around 2000 chit-fund companies in India present by now. We will try to include as many more companies as possible on our platform. We are planning to raise 50 percent more money involved in next five to six months.

III. EXISTING SYSTEM

Today, There are 3 kinds of Chit fund systems are present in India, namely Chit funds governed by the State government of Kerala State Financial Enterprises. Also, there are registered Chit funds like Shriram chits which are run and governed by big businessmen and are registered at government. Unregistered Chit funds, which are run on the basis of friendship and close proximity of the people. These chit funds have less security. Chit-funds which are run by PSUs are the safest among all. The second safest is the one run by registered ones. The least secured is the unregistered ones.

IV. PROBLEM STATEMENT

In today's world there is no trust amongst common people on Chit-fund due to massive scams that took place. The scam amount of chit funds is 8000 Billion and still counting. To overcome this scam and bringing back trust amongst the common people, Block-chain can be implemented with chit-fund. Everything put into the block-chain system is completely immutable. As the block-chain is Immutable, it will not let you make any changes to the data which is stored into the system. The data is stored in Blocks and the blocks can not be tampered. Block chain is about trust and if we can bring about this system of trust, more people will be on boarded and this unregulated territory can be regulated. For Chit subscribers, it is going to be helpful because if you are doing chit with any chit fund company, you can have complete faith in how the chit group is formed, and the entire history of the chit group at just one click of a button.

V. PROPOSED SYSTEM

Today most of the people do not consider chits as a saving instrument because of many chit scams that have come to the fore in past few years. Youngsters tend to stay away from it. Average age of chit fund subscribers is anywhere between 35-45.

We want to change this; participating in chitfunds must be made so easy and transparent so that people do not blink an eye before joining chits. Any data that is put into the block chain system is totally immutable (Can not be edited). If a regulator is approving any application of any registrar that goes and sits into system and this data cannot be tampered. For Chit subscribers, T-Chits is going to be a big deal because if you are doing chit with any chit fund company, you can have complete faith in the how the Chit group is formed, when is it formed and the whole history of the group with the government and subscriber at click of button.

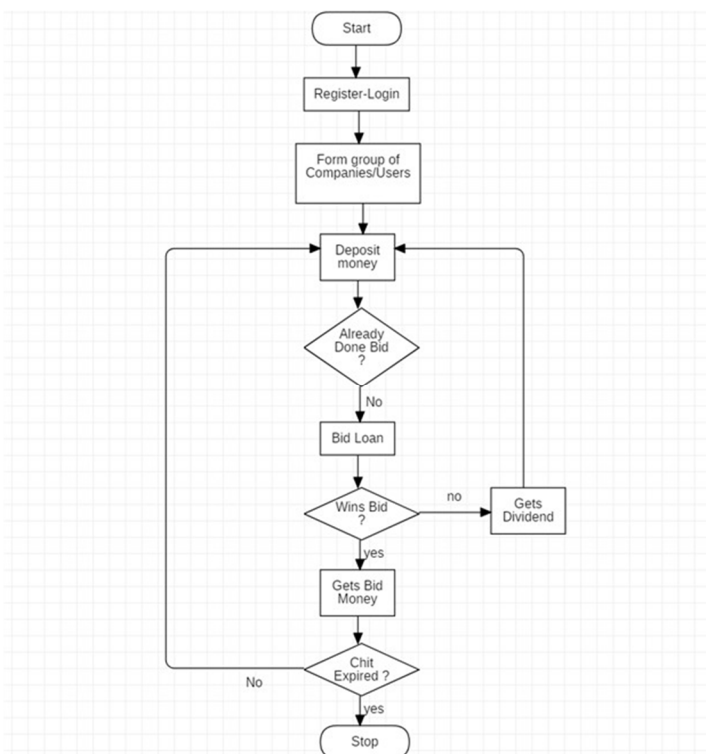


Fig. 1. Proposed System

A. Algorithm

To best explain its working, here's a simple example:

Let's assume there is a chit fund

- 1) with 20 members
- 2) each contributing Rs. 5,000 per month
- 3) for 20 months

Thus total monthly collection in this chit fund = Rs. 100,000.

Assume that in the 1st month, 3 members need funds and so they participate in the bidding process.

Member 1 bids for Rs. 80,000

Member 2 bids for Rs. 75,000

Member 3 bids for Rs. 70,000

Thus, Member 3 becomes eligible to withdraw the money for the month as his bid is lower than the first member's bid.

Thus, Foreman's fee = Rs. 5,000 (5% of Rs. 100,000)

Member 3 can now withdraw

Rs. 70,000 – Rs. 5,000 = Rs. 65,000

The remaining Rs. 30,000 (Rs. 100,000- Rs. 70,000) is distributed equally among all the members, i.e.: Rs. 1,500 each. So after the first month, each member contributes only Rs. 3,500 (Rs 5,000- Rs 1,500)

The same process is repeated every month for a total of 20 months.

VI. IMPLEMENTATION

A. Android Studio

Android studio is the official IDE (Integrated Development Environment) or tool (layman terms) for developing application exclusively for Android platform. It has a strong editor tool for developing creative User Interface and emulators to test the application[20].

So let's launch AndroidStudio.exe. Make sure before launch Android Studio, your Machine should have pre-installed Java JDK. Once you launched Android Studio, its time to mention JDK7 path or later version in android studio installer.

B. Java Server Pages (JSP)

JSP is a technology which is used to create simple and attractive web apps. JSP technology is almost similar to Servlet technology as it provides more functionalities to the developers rather than servlet such as expression language, JSTL, etc[19]. The pages which a developer develops in JSP consists of HTML tags and JSP tags. The JSP pages are easier to develop and maintain than Servlet pages as designing and development both are separated. Additional features such as Expression Language, Custom Tags, etc. are also provided by JSP.

C. Ethereum

Ethereum is an open source based technology. It is public and blockchain-based distributed computing platform. It is also an operating system featuring smart contract (scripting) functionality. It supports transaction-based state transitions in Blockchain[20]. Ethereum generates Ether as its cryptocurrency to reward the mining nodes for computations performed. Ether is the only currency accepted in the payment of transaction fees.

Ethereum Virtual Machine (EVM) is the decentralized virtual machine provided by Ethereum. EVM executes the scripts using an international network of public nodes. It uses "Gas" as an internal transaction pricing mechanism, to mitigate spam and allocate resources on the network[20].

VII. RESULTS

Add Chitfund

Chitfund Form

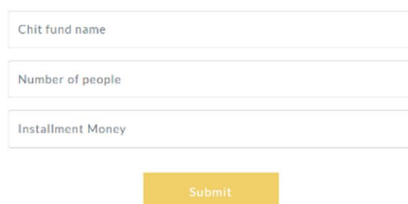


Fig. 2. Adding of new Chit

The above figure 2 shows the adding of new Chit-Fund group.

Show Transaction

Show transaction from blockchain of joining Bid

#	Fund Name	User Name	Bid Amount	Transaction id
1	test	suraj	1200	0xc37a94b0ba32ff23849f92552c368864115c5e880218e95e4648791670272490
2	test	ashutosh	1500	0xd4f997ee1e0d4239606b3e0e071663748f20c16461850eaf22c7517c480f798
3	test	arshad	1800	0ae292a197b7e73525a7544074c6363b8951f701470eac510948891703725ee6

Fig. 3. User placing new bid

The above figure 3 shows the respective user is placing his/her respective bid.

The above figure 4 shows the winner of the bidding process.

Show Transaction

Show transaction from blockchain of joining Bid

#	Fund Name	Bid Winner's Name	Amount
1	test	suraj	1200

Fig. 4. Winner of bidding process

User Balance
All Users Balance are given below

Id	User Name	Balance After Adding Dividend
1	Suraj	1800
2	arshad	600
3	ashutosh	600

Fig. 5. Updated balance of every user

```

[03-04-12:54:43.790] Initialized fast sync bloom
[03-04-12:54:48.769] Unlocked account
[03-04-12:54:48.833] Etherbase automatically configured
Welcome to the Geth JavaScript console!
Instance: geth/60c01042.3.1; stable=395f6ff/galileo.amd64/gol.12.7
Coinbase: 0x6c202c45130fca78170a53c2b089568f9c14db
at block: 0 (Thu, 01 Jan 1970 05:30:00 IST)
dataDir: /usr/local/bin
modules: admin:1.0 debug:1.0 ethash:1.0 miner:1.0 net:1.0 personal:1.0 rpc:1.0 txpool:1.0 web3:1.0

> miner.start()
[03-04-12:55:30.721] Updated mining threads
[03-04-12:55:36.764] Transaction pool price threshold updated
[03-04-12:55:36.757] Commit new mining work
[03-04-12:55:37.460] Successfully sealed new block
[03-04-12:55:39.460] 0 Mined potential block
[03-04-12:55:39.601] Commit new mining work
[03-04-12:55:39.699] Successfully sealed new block
[03-04-12:55:39.987] 0 Mined potential block
[03-04-12:55:39.987] Commit new mining work
  
```

Fig. 6. Ethereum server running on CMD

The above figure 5 shows the updated balance of each user after the bidding process.

The above figure 6 shows that Ethereum server is running and blocks of transactions are being successfully created on CMD using the geth com- mand.

VIII. CONCLUSION

The project objective of safe and secure Chit- fund transaction is achieved using Blockchain technology, by storing all the transactions in the system inside the Ethereum Blocks. Using this Chit-fund system, people can trust and invest their money in the Online Chit-funds. The Authenti- cation and verification process in the chit-fund system has brought faith to the people. This system reduces the chance of scam which takes place in Traditional Chit-fund systems. Thus a safe and highly secure Chit-fund System is successfully developed.

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