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## BLOCKCHAIN BASED FUND RAISING

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### **Abstract:**

The quick development of information technology and the expertise required to support it has sparked rivalry among investors to find the finest talent. Additionally, the candidates have a wide variety of possibilities to pick from due to the vast spectrum of technological orientations. It is crucial in this situation to secure and economically connect the best funders and developers. Blockchain technology aids in the development of a decentralized user network where transactions are tracked in an accessible distributed ledger. These characteristics of blockchain make it possible for many apps to run on a transparent and affordable platform. It is suggested that a global crowdfunding platform based on the requirement for an efficient platform for establishing smart nations and the inherent benefits of blockchain technology. Different nodes of the network might take the roles of funders and developers. To find the best solution for the funders, a smart contract is used between the funders and the developers. The developers debate this issue until the best outcome or equilibrium is found. The results of the experiments demonstrate that the suggested model outperforms previous generic algorithms for crowdfunding.

### **Keywords:**

Blockchain, Crowdfunding, Ethereum, Smart contract.

### **Introduction:**

Simply explained crowdfunding is the process of a group of people obtaining money for a project or campaign without the help of reputable organizations like banks or lending companies. According to Freedman and Nutting, crowdfunding is a strategy for obtaining a number of small donations using an online financing platform in order to raise money for a well-known company. The three key participants in the crowdfunding action were the contributors, The project managers and crowdfunding platform. Among the most well-known crowdfunding websites are kickstarter.com, indiegogo.com, and mystartr.com. The biggest advantage of crowdfunding is that it may quickly raise the required quantity of money. This is because so many people utilize the Internet and social media today, making it possible for the project's inventor to quickly reach the public through these channels. Additionally, because it is more difficult to obtain loans from banks or other investors, many project creators have decided to use crowdsourcing to collect money for their ventures. This occurred as a result of the lengthy processing times for most loans. There are non-financial benefits to crowdsourcing, according to certain research. Crowd funders, for instance, can contribute value-added engagement and input to the project while also generating attention and raising brand recognition. According to Schlueter, there are two primary benefits of crowdsourcing.

The first benefit of crowdfunding is that it helps match global funders and innovators more effectively. The second benefit is that during the project's early stages, investors may access more data. Investors will find this information to be quite helpful, which may increase their desire to contribute to such crowdfunding initiatives. But even with their numerous benefits, crowdfunding 2 platforms still have a lot of shortcomings that need to be fixed. One of the major problems with traditional crowdfunding platforms is fraud cases, which claim that online fundraising exposes donors to fraud since conventional legal and reputation protection procedures may not be effective. This is further emphasized by the fact that I said "no." ISSN: 2502-4752 Indonesian Journal of Electrical Engineering and Computer Science, Volume 15, Number 1, July 2019: 409–413 When a project is submitted, credentials are required, and there are little legal requirements to fulfil the promises made in the project. Other studies have identified a few other issues with crowdsourcing, such the following: 2) after a delivery deadline that wasn't fulfilled, campaign organizers stop interacting with their backers for more than six months; 3) the promised goods are never delivered and the backers aren't given a complete refund. Over 75% of crowdfunding campaigns deliver things later than anticipated, according to different research. By integrating smart contracts into the mechanism for crowdfunding, it can establish a contract holding contributors' funds until a specific date or objective is met. The money will either be handed to the project owners or safely returned to the contributors, depending on the outcome. A distributed database of transaction records that are shared among involved parties might be referred to as a blockchain.

### ***Objectives:***

- To create Ethereum-based smart contracts that support improved and secure inter-person communication using a blockchain-based platform.
- To develop a virtual wallet for funders and collectors that will aid in future money transfers.
- To develop a distributed block chain platform for analyzing contract fraud and seven transactions that take place during communication between the donor and the collector in order to safeguard the financing process.
- To create a basic degree of security for funders and collectors to access smart contracts. To use the blockchain technology to give donors a safe path to a chosen contract.
- To give transaction reports for various transactions done in accordance with this method so that information may be obtained at any time.

### ***Scope of project:***

The primary scope of the project is to assess how much of the proposed system (USD)smart contract's value is actually being used. The existing system's set pricing for Ether (ETH) prevents it from changing automatically when the price of Ether (ETH) changes. In contrast to the recommended approach, the price is modified automatically with no need for human involvement or to alter the blockchain's code.

### ***Existing systems:***

The majority of the current crowdfunding sites are centralized systems, which might cause certain issues. As previously said, internet crowdfunding exposes donors to fraud because established legal and reputation protection safeguards could not be effective. Today's most well-known crowdfunding websites are kickstarter.com, indiegogo.com, mystartr.com, fundly.com, and more.

### ***Drawbacks of existing systems:***

Few drawbacks for the existing system are, the pricing of ether is not automated. A user must change the price each-and-every time if the price fluctuates. Moreover, there is a potential for the re-entrance attack or an exploit could take place. Moreover, the existing system is not completely up to date which could be an issue in the future.

### ***Literature survey:***

Numerous blockchain-related investigations have been conducted over the last several years, and the number is increasing every day. Blockchain technology has various advantages and may be applied in a range of businesses, claim Chatterjee Rishi et al. (2017). More research is required because blockchain technology is still in its early stages. (2018) A paradigm for transaction execution in the insurance process was proposed by Railway Mayank et al. This study recommends using blockchain-based architecture and hyper ledger technology to handle insurance transaction processes using smart contracts. Crowdfunding has issues with abuse, trust, and secrecy, according to Hongjiang Zhao et al. (2018). The author provided an explanation of how using block chain technology to crowdfunding contracts would provide the required fix. Bosco et al. (2018) offer research on creating a private Ethereum blockchain that allows series of service for renewable energy sources (RES) investments. This shows a real case of application blockchain in financial sector. The implementation of trustable, price based, addressing RES financial peer-to-peer (P2P) addressing RES financial investors and district energy consumers is discussed. Kumar Bhabendu et.al (2018): discuss that Smart contract is secure computer program having self-verification, self- executing and tamper resistant properties. In real time application along with blockchain technology smart contract performs task with low cost and provide more level of security. The overall architecture, workflow and taxonomy of smart contract is clearly discussed in this paper. A white paper on blockchain states that Blockchain has shown its potential for transforming traditional industry with its key characteristics. This Paper gives an overview of blockchain discusses blockchain 9 technology's architecture, use cases, solutions, and the numerous financial businesses it can help [8]. Michael Gebert (2017) Talk about the value of crowdfunding for new enterprises. The government must make it simpler for new firms to obtain finance since they are constantly threatened by unemployment and job insecurity. A ray of hope for global outsourcing for economic revival is provided by blockchain technology. Keevil Dusk is conducting research on how the blockchain technology platform may affect other industries and enterprises (2018). Understanding how blockchain technology works and what advantages it offers for business and financial operations is the goal of this study. The purpose of this study is to comprehend how blockchain technology for commercial and financial operations operates and offers benefits. In contrast to Bitcoin, the Ethereum blockchain network does not have a cap on block size, as discussed by Rouhani Sara et al. (2017). However, there are also issues with processing infinite transactions, such as the fact that various clients run the Ethereum blockchain code at varying speeds and performance levels. In order to better understand the impact of various clients on Ethereum performance, this study analyses Ethereum transactions on a private blockchain. According to Hegde's Peter (2018), smart contracts are unique programmers that operate on the blockchain and support the Ethereum platform. In this paper, it was suggested that Solidity contract-oriented language-written smart contracts be used with well-known static OO metrics. Along with programming languages themselves, these measures evolved. Such measurements cannot be calculated using any software. Zinc Daniel et al. (2018) present a system for international road tax payment using blockchain technology built on the Ethereum platform. A web-based application for creating new Ethereum blockchain accounts was presented by the author in this article. This method will be utilized to pay for road tax subscriptions and verify their authenticity.

### ***Problem statement:***

The majority of the current crowdfunding sites are centralized systems, which might cause certain issues. As previously said, internet crowdfunding exposes donors to fraud because established legal and reputation protection safeguards could not be effective.

### ***Proposed system:***

In the proposed system comparison of the amount in the smart contract in US dollars in the suggested system (USD) is taking place. Since the price of Ether (ETH) is fixed in the current system, it cannot alter automatically when the price of Ether (ETH) changes. As opposed to the suggested solution, which involves no human intervention and no need to update the code on the blockchain, the price is changed automatically. Few of the advantages are: -

The system which is implemented has an advantage of price automation which reduces the need for manual work and more secure. Moreover, the implemented system has a re-entrance guard which protects the smart contract from the possible and known attacks. Moreover, the implemented system is completely up to date and possibly won't be any issues in the future.

### **Modules:**

There are two modules in this project.

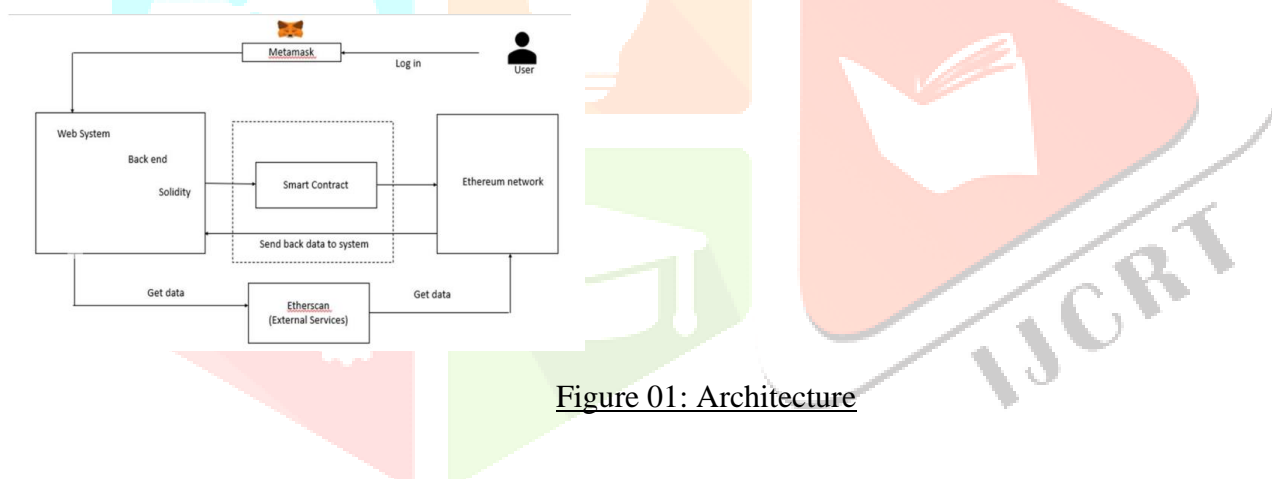
They are:

1. Fund module.
2. Price converter module.

### **Architecture:**

The user will log into the cryptocurrency wallet to begin the procedure. Although there are other cryptocurrency wallets on the market, here it is utilizing MetaMask to determine the viability of the project. One of the most utilized and well-known Ethereum-based wallets, MetaMask saves the user's private and public keys. The MetaMask will automatically get the balance amount accessible in the address from that address and the private key. The browser will inject web3.js (or ethers.js) into the browser once the user logs into the MetaMask.

Connecting to the blockchain is facilitated by this. From then, the blockchain begins to implement all of the backend programming. Here, programming language Solidity is used for the backend.



**Figure 01: Architecture**

### **Process:**

The user will log into the cryptocurrency wallet to begin the procedure. Although there are other cryptocurrency wallets on the market, currently MetaMask is used to determine the viability of the project. One of the most utilized and well-known Ethereum-based wallets, MetaMask saves the user's private and public keys. The MetaMask will automatically get the balance amount accessible in the address from that address and the private key. The browser will inject web3.js (or ethers.js) into the browser once the user logs into the MetaMask. Connecting to the blockchain is facilitated by this. From then, the blockchain begins to implement all of the backend programming. Node.js was used to set up the pipeline to ethers.js (or web3.js) for the backend portion of the application. Out of 13 their own interests, building the smart-contract using the programming language and put it to the blockchain. The smart contract is deployed on the Ethereum blockchain in this project. Etherscan is used to obtain transactional data such as from, to, amount, time, etc. The information about the transaction will be pulled from the blockchain by Etherscan and shown in the user interface.

***Methodology:***

Blockchain is a decentralized, unchangeable database that makes it easier to track assets and record transactions in a corporate network. An asset may be physical (such as a home, car, money, or land) or intangible (intellectual property, patents, copyrights, branding). On a blockchain network, practically anything of value may be recorded and sold, lowering risk and increasing efficiency for all parties. The distributed ledger and its immutable record of transactions are available to all network users. Transactions are only recorded once using this shared ledger, preventing the duplication of effort seen in conventional corporate networks. Once a transaction has been added to the shared ledger, no participant is permitted to alter or interfere with it. A fresh transaction must be entered to undo a mistake in a transaction record before both transactions are displayed. A set of instructions known as a smart contract is used to store information on the blockchain and is automatically carried out to speed up transactions. A smart contract can specify parameters for corporate bond transfers, stipulate how much must be paid for travel insurance, and much more.

***Implementation:***

This explains how the project operates. First the user has to connect to the website through his crypto wallet which has all the crypto which he want to fund to the smart contract. After that he can see and use the methods which are used in the smart contract. The fund function allows any person in the world with the crypto to fund the amount. Once the functionality of the fund function is completed then the funder address is saved to the blockchain and the state of the blockchain will be updated and the amount will be added to the smart contract's account. Using the withdraw function the deployer or the person who created the smart contract can transfer the amount which are available in the smart contract to the owner account. Get owner function fetches account details of the owner from the blockchain. This is a function which not so used but some charities can get to know about the owner with the help of this address only. Get funders function fetches the address of the funders to the owner. This could be helpful if the owner wants to send a thank you note or something to the funder. Address to amount funded function will fetch the amount that the given funder funded.

***Requirement specifications:***

- Visual studio code
- Remix IDE
- Solidity
- Solidity compiler.
- Hardhat.
- Test ether.
- Ethers.js
- Node.js.

**Results:**

The project's findings are pretty intriguing. As soon as a user deploys money, the smart contract immediately recognizes the change, and all of the tasks stated in the contract began to operate as intended without any unnecessary behavior.

The project's outcomes are summarized as follows:

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[+] From: 0x421...0004 to: FunMn (constructor) value: 0 wei data: 0x0a...0003 logs: 0 hash: 0x0a...f0d2
call to FunMn_00000000

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call to FunMn_00000000

```

**Figure 02: Output when a function is called and state of the blockchain changed.**

**Conclusion:**

The proposed design provides secure, distributed and decentralizes ledger for execution of transaction between funder and project owner with help of smart contract. The aim is to provide control over the money raised by the funders. Our design identifies use of smart contracts that govern the rules for transaction. Blockchain technology is being used to see the transparent and overall process of funding/Investment by building the application using ethereum. The proposed system will report of some malicious attack with the help of smart contract with ethereum and provides a good control on how money being sent and where money being sent based on voting mechanism.

**Future scope:**

Anybody may contribute money to the project if the frontend is created and turn it into an end-to-end blockchain application. Given the blockchain technology's present stage of development, the majority of hacking or vulnerability attacks haven't been totally avoided in the project, but there will undoubtedly be more attacks in the future and more solutions to the attacks that will need to be introduced to the project.

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