BLOCKCHAIN BASED FUND RAISING FOR CHARITY FUNDS AND CROWDFUNDING

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Abstract. The competition among investors to secure the best talent in the rapidly expanding field of information technology has led to the need for a secure and cost-effective means of linking funders with developers. With a wide range of technological directions available, it is important to establish an efficient and trustworthy crowdfunding platform. Blockchain technology offers a decentralized network of users, where transactions are recorded in a distributed ledger, providing transparency and cost-effectiveness for various applications. In light of this, we propose a global crowdfunding platform, utilizing the features of blockchain technology to connect funders and developers as different nodes of the network. A smart contract is deployed between them to arrive at an optimal solution for the funders, with the process repeated between developers until reaching an equilibrium. Our experimental results indicate that this model outperforms generic crowdfunding algorithms.

Keywords - Blockchain, Crowdfunding, Ethereum, Smart contract.

INTRODUCTION

Crowdfunding is a method of raising funds for a project or campaign by a group of people, without relying on established entities like banks or loan providers. It typically involves three parties: contributors, crowdfunding platforms, and project managers. Popular crowdfunding platforms include Kickstarter, Indiegogo, and MyStartr. One of the main benefits of crowdfunding is that it can raise the required funds quickly, often in a short amount of time. This is possible because many people use the internet and social media, which allows project founders to reach a wider audience in a short time. Additionally, crowdfunding may be a more feasible option for some project founders who struggle to obtain loans from banks or other investors due to lengthy approval processes.

Crowdfunding can also offer non-financial benefits such as value-added involvement and feedback from the crowd, as well as increased publicity and public awareness of the business. According to Schlueter, there are two primary advantages of crowdfunding: better matching between inventors and funders from around the world, and improved access to information for investors during the initial phase of the project. However, crowdfunding platforms still have several flaws that need to be addressed. One major issue is the potential for fraud, as online crowdfunding can leave contributors vulnerable to scams and other forms of fraudulent activity.

EXISTING SYSTEM AND ITS DRAWBACKS

One significant drawback of some crowdfunding platforms is that the ether price may not be automated, which can make it difficult to accurately calculate contributions in real-time. Additionally, there is a risk of reentrancy attacks, where malicious actors exploit vulnerabilities in smart contracts to steal funds or disrupt operations. This is particularly problematic for decentralized crowdfunding platforms that rely on smart contracts to facilitate transactions. Another issue is that some crowdfunding platforms may not be regularly updated or maintained, which can lead to outdated software and potential security vulnerabilities. This can negatively impact the user experience and undermine confidence in the platform's security and reliability. To overcome these challenges, it may be necessary to explore alternative crowdfunding models that leverage blockchain technology to create decentralized, secure, and transparent platforms. These platforms can offer increased security, privacy, and transparency by using smart contracts to automate transactions and eliminate the need for intermediaries. By utilizing decentralized ledgers and

cryptographic protocols, it may be possible to create a more secure and efficient crowdfunding ecosystem that benefits both project founders and contributors alike.

Drawbacks:
- Ether price is not automated
- Possibility for reentrancy attacks.
- Not updated.

PROBLEM STATEMENT

Crowdfunding has become a popular way for startups and entrepreneurs to raise funds for their projects, and it has emerged as an effective alternative to traditional fundraising methods. However, as the popularity of crowdfunding has grown, so have the challenges and risks associated with it. One of the main issues with centralized crowdfunding platforms is the lack of transparency and accountability, which can lead to fraud and other forms of malicious activity. Centralized crowdfunding platforms often rely on a centralized authority to manage transactions, which can make them vulnerable to hacking, data breaches, and other security threats. Moreover, these platforms may charge high fees for their services, which can reduce the amount of funds available for the project.

PROPOSED METHODOLOGY

The advantages of the proposed system over the existing system are numerous. Firstly, the price of Ether is automated, which means that it can be easily updated without requiring any human effort. This is a major advantage because in the existing system, the price of Ether is fixed and cannot change automatically, even if the price of Ether changes in the market. Secondly, the proposed system is much more secure than the existing system because it is not subjected to reentrancy attacks. Reentrancy attacks are a type of attack that can be launched against smart contracts in which an attacker can repeatedly call the same function before the previous call is finished, thereby potentially exploiting a flaw in the contract and stealing funds. Thirdly, the proposed system is completely updated, which means that it is built on the latest technology and incorporates the latest security measures. This is important because in the rapidly evolving field of blockchain technology, it is important to stay up to date with the latest developments to ensure that the system is as secure and efficient as possible. In conclusion, the proposed system offers numerous advantages over the existing system, including automated pricing, enhanced security, and up-to-date technology. These advantages make the proposed system a more reliable and efficient crowdfunding platform for funders and developers alike.

MODULE DESCRIPTION

There are two modules in this project. They are:

- **FOUNDING MODULE:**

  This module serves as the backbone of the proposed crowdfunding platform as it contains all the necessary functions to execute the transactions between the funders and project owners. The smart contract defines the rules for the transaction and ensures that the funds are secure and transparent. Through the smart contract, funders can easily fund or withdraw their funds, view the owner address, and see how much amount they have funded. The funders array is also maintained within the smart contract, which keeps a record of all the funders and the amount they have contributed. With the help of this smart contract, the proposed system provides a secure and decentralized platform for crowdfunding.

- **PRICE CONVERTER MODULE:**

  In addition to the aforementioned functions, this module will also include the logic for automatically updating the price of ether (ETH) based on its current market value. The module will interact with external APIs or services to fetch the latest ether price and update it in the smart contract. This will ensure that the price used for funding and withdrawing is always up-to-date and accurate. The conversion of ether price to USD will also be done in this module using the latest exchange rates. By automating these processes, the proposed system eliminates the need for manual intervention and reduces the risk of errors or discrepancies in the price calculations.

Documenting the methodology in an appropriate format is an important step to ensure that the project is understandable to all parties involved. The methodology will be implemented with a user, which will help to test the system and identify any potential issues.

The functions used in the project are critical to the operation of the system. These functions include funding, withdrawing, retrieving the owner address, accessing the array of funders, and determining the amount of funds contributed by each funder. Additionally, the project will use a module to fetch the current ether price and convert it to USD, which is essential for determining the value of contributions in a stable currency.
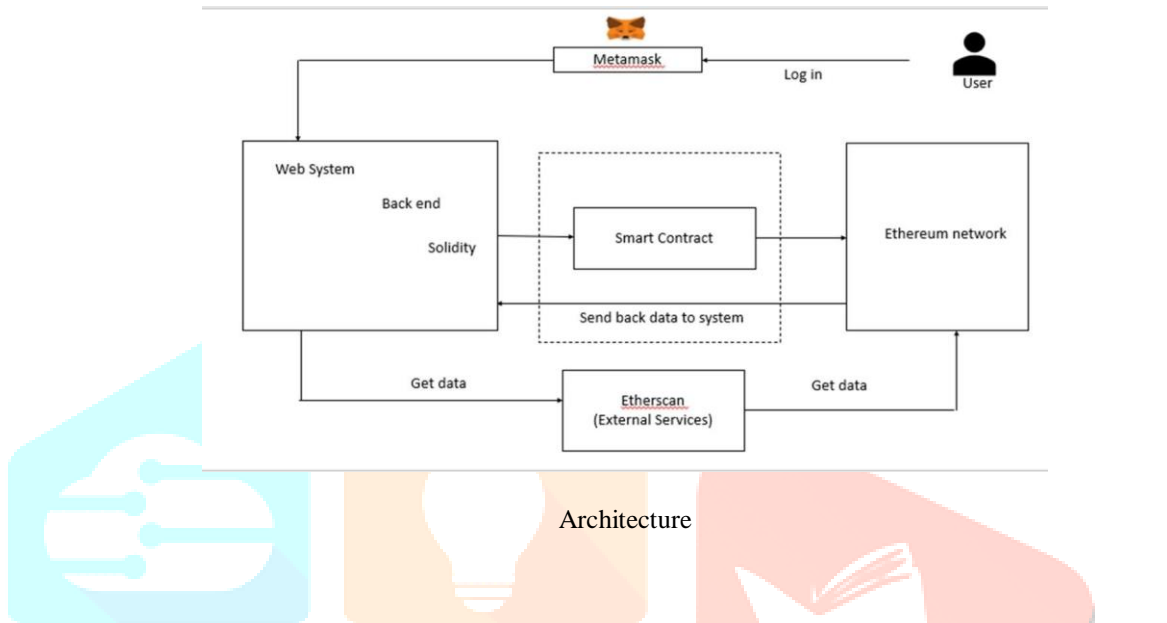
Architecture

IMPLEMENTATION

The user will initiate the process by logging in to their crypto wallet. While there are numerous crypto wallets available in the market, for this project, we have selected MetaMask as it is one of the most widely used and popular Ethereum-based wallets that securely stores the user's private and public keys. Once the user logs in to MetaMask, the web3.js or ethers.js library is automatically injected into the browser, enabling connection to the blockchain. This initiates the implementation of the backend code on the blockchain. For the backend, we have used Solidity as the programming language and Node.js to establish the pathway to ethers.js or web3.js. Based on the programming language, the user can code the smart contract and deploy it to the blockchain according to their own preferences. In this project, we have deployed the smart contract to the Ethereum blockchain. To obtain transaction data such as sender, recipient, amount, and time, we are utilizing Etherscan, which retrieves the relevant data from the blockchain and presents it in the user interface. By using Etherscan, we can ensure that the data we are displaying is reliable and trustworthy.

WORKING

Fig 1. Deployment

CONCLUSION

The proposed methodology offers a reliable and secure solution for executing transactions between funders and project owners. By utilizing smart contracts, our design ensures that the rules governing the transaction are transparent and decentralized. The use of blockchain technology allows for a transparent and overall view of the funding and investment process. Our application is built using Ethereum, which offers the necessary infrastructure for creating and deploying smart contracts on a decentralized platform. It also offers protection against malicious attacks through the implementation of smart contracts with Ethereum. Additionally, the system provides a robust control mechanism for funders, allowing them to vote on how and where the funds are sent. This ensures that the money raised is used in the best possible manner and that the project owners are held accountable for the funds they receive. Overall, the proposed methodology offers a reliable and transparent platform for crowdfunding, ensuring the trust and confidence of both funders and project owners.

FUTURE ENHANCEMENT

To develop a frontend for the project and make it an end-to-end blockchain application where anybody can fund amount. Considering the current developing phase of the blockchain technology most of the hacking or vulnerability attacks doesn't completely have avoided in the project but in future there will definitely be more attacks and more solutions to the attacks which needed to be added to the project.

- It's important to continually monitor the security of the blockchain application and implement updates as needed to address any vulnerabilities or potential attacks.

- As the blockchain technology evolves and improves, it may be possible to incorporate additional features or functionality into the project that were previously not possible.

- User feedback and testing can help to identify areas for improvement and ensure that the application is user-friendly and meets the needs of its intended audience.

- It may be beneficial to explore partnerships or collaborations with other companies or organizations in the blockchain space to further enhance the project's capabilities and reach.

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