CRYPTOBACKER: CROWD-FUNDING DAPP

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Abstract: Crowdfunding represents a modern financing approach that distinguishes itself from traditional borrowing. It champions inclusivity, welcoming both individuals and organizations as participants. In this model, a collection of contributors, known as a crowd, offers small financial contributions to support projects, products, or ideas. These initiatives are initiated by fundraisers, such as entrepreneurs or individuals, who seek capital to materialize their endeavors. Fundraisers connect with investors either directly or through dedicated digital platforms acting as intermediaries. Crowdfunding, now rooted in the web 2.0 era, has gained increasing academic attention.

Blockchain technology is revolutionizing traditional crowdfunding techniques in the field of digital finance. The decentralized application (DApp), CryptoBacker builds confidence between project creators and backers by utilizing the immutable ledger of blockchain technology to facilitate safe and transparent transactions. It automates deals using smart contracts, doing away with middlemen and cutting expenses.

Index Terms – Blockchain Technology, Crowdfunding, Decentralized Applications.

I. INTRODUCTION

Crowdfunding has created the opportunity for entrepreneurs to raise hundreds of thousands or millions of dollars from anyone with money to invest. Crowdfunding provides a forum to anyone with an idea to pitch it in front of waiting investors. The two most traditional uses of the term reflect the type of crowdfunding done by start-up companies looking to bring a product or service into the world and by individuals who experienced some type of emergency [4]. Crowdfunding represents an alternative way of funding compared to traditional borrowing. As a principle, crowdfunding is open to everyone - private persons as well as economic actors. [3]

A group of people, the crowd, financially contributes small amounts to projects, products or ideas. These projects, products or ideas are owned by fundraisers (e.g. entrepreneurs or private persons), seeking for money in order to get their project realized. Fundraisers search for investors directly or via a specific digital platform, referred to as intermediaries [4]. Crowdfunding represents a recent web 2.0 based phenomenon gaining more and more scientific attention.

1.1 Motivation and Background

The rise of information technology has led to a surge in interest of investors and businesses in advanced futuristic technologies like Blockchain and Cryptocurrency. Blockchain is the heart of web3 technologies. One of the fields that could be revolutionized using it is crowdfunding. Crowdfunding is the process of supporting a project by obtaining modest contributions from a large number of individuals, usually online. Modern day crowdfunding websites are centralized, prone to cyberattacks, charge high amounts of transaction fees, have print rules & regulations and intellectual property risk. Blockchain has emerged as a technology which promises decentralization of a system along with a highly secured database. Blockchain is a distributed immutable ledger used to record transactions [5].

1.2 Problem Statement

The current state of crowdfunding is filled with difficulties that limit the possibilities of both project creators and supporters. Project developers frequently run into difficulties trying to get the required money through traditional methods, which may limit innovation and originality. In addition, it may be challenging for creators to stand out from the crowd on crowdfunding sites given the wide variety of projects that are available. The crowdfunding process can be difficult to navigate, from campaign setup to money transactions and updates to supporters. On the other hand, supporters frequently struggle with a lack of trust, questioning the validity of projects, and concern about money being misused. Finding worthwhile projects in the sea of options might take effort, and there aren't many ways to interact with the creators. Addressing these numerous obstacles is critical to unlocking the true potential of crowdfunding.

The major or the common problem that was seen across all the previous decentralized crowdfunding applications was that their security system somewhere lacked a mechanism or algorithm that was hard to breach. [6]

1.3 Objective

In this report, our primary objective is to carefully analyze and clarify the creative possibilities of a decentralized crowdfunding application (DApp). We aim to introduce the DApp, CryptoBacker, providing a better understanding of its features, functionalities, and the benefits it offers to both project creators and supporters. Furthermore, we will discuss the integration of blockchain technology, emphasizing its role in enhancing security and transparency within the crowdfunding landscape.

II. LITERATURE SURVEY

[1] S. Singh Bamber presented a paper on CrowdFund: CrowdFunding Decentralised Implementation on Ethereum Blockchain in the year [2023]. The research paper explores the implementation of decentralized crowdfunding using the Ethereum blockchain. It discusses how decentralized platforms can revolutionize traditional crowdfunding models by leveraging blockchain technology to enhance security, transparency, and accessibility. The paper delves into the technical aspects of developing and deploying decentralized crowdfunding smart contracts on the Ethereum network. Overall, the paper provides insights into the innovative potential of decentralized crowdfunding solutions and their implications for the future of fundraising.

[2] M. Rane et al. presented a paper on Polyfund: Polygon - Based Crowdfunding Dapp [2023]. The research paper focuses on the development and implementation of Polyfund, a decentralized application (DApp) for crowdfunding built on the Polygon blockchain. The paper discusses how Polyfund utilizes Polygon's scalability, low transaction fees, and interoperability to create an efficient and user-friendly crowdfunding platform. It details the features and functionalities of Polyfund, including project submission, funding mechanisms, investor engagement, and reward distribution. Overall, the research highlights the advantages of using Polygon for decentralized crowdfunding and the potential impact of Polyfund on democratizing access to capital for projects of all sizes.

III. METHODS OF IMPLEMENTATION

Selecting an appropriate blockchain platform is crucial, considering factors like scalability and community support. Once the platform is chosen, the development of smart contracts becomes essential for managing crowdfunding processes securely and efficiently. Simultaneously, designing an intuitive user interface plays a vital role in ensuring seamless interaction for both project creators and backers. Integration of payment methods, including cryptocurrency wallets and fiat gateways, facilitates contributions.
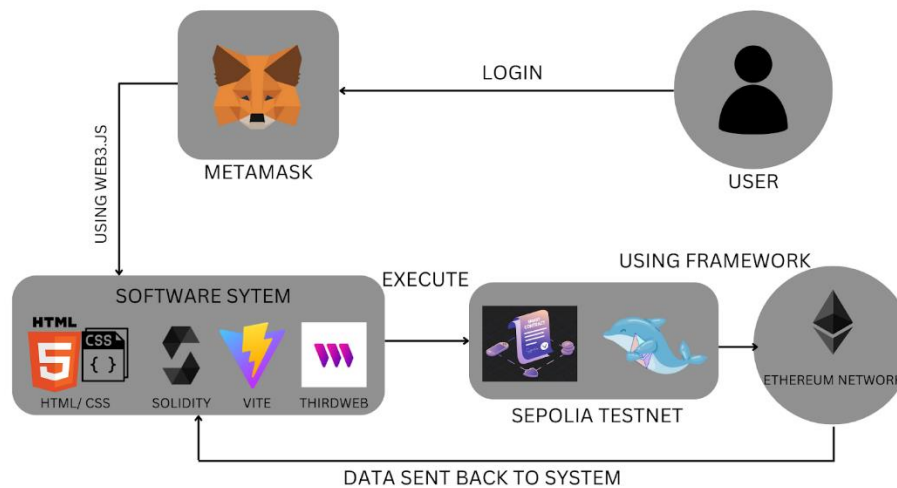
3.1 Block Diagram

Figure 3.1: Simple Block Diagram of the System

3.2 Software Scheme

3.2.1 HTML/ CSS

HyperText Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It defines the content and structure of web content. It is often assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript.

3.2.2 Solidity

Solidity is a programming language for implementing smart contracts on various blockchain platforms, most notably, Ethereum. Solidity is licensed under GNU General Public License v3.0.

3.2.3 Vite

Vite is a local development server written by Evan You, the creator of Vue.js, and used by default by Vue and for React project templates. It has support for TypeScript and JSX. It uses Rollup and esbuild internally for bundling.

3.2.4 Thirdweb

Thirdweb is a platform that provides a suite of tools for creators, artists and entrepreneurs to easily build, launch and manage a Web3 project.

3.2.5 MetaMask

MetaMask is a software cryptocurrency wallet used to interact with the Ethereum blockchain. It allows users to access their Ethereum wallet through a browser extension or mobile app, which can then be used to interact with decentralized applications.

IV. ALGORITHM & FLOWCHART

4.1 Algorithm

- Setup:

Install necessary tools: Node.js, MetaMask, etc.
Configure MetaMask for Sepolia testnet.

- Smart Contracts:

Write Solidity contracts for crowdfunding logic.

- Frontend:

Develop UI using React.js, HTML/CSS
Integrate MetaMask for user authentication.

- Backend:

Set up a backend for contract interaction.

- Testing and Deployment:

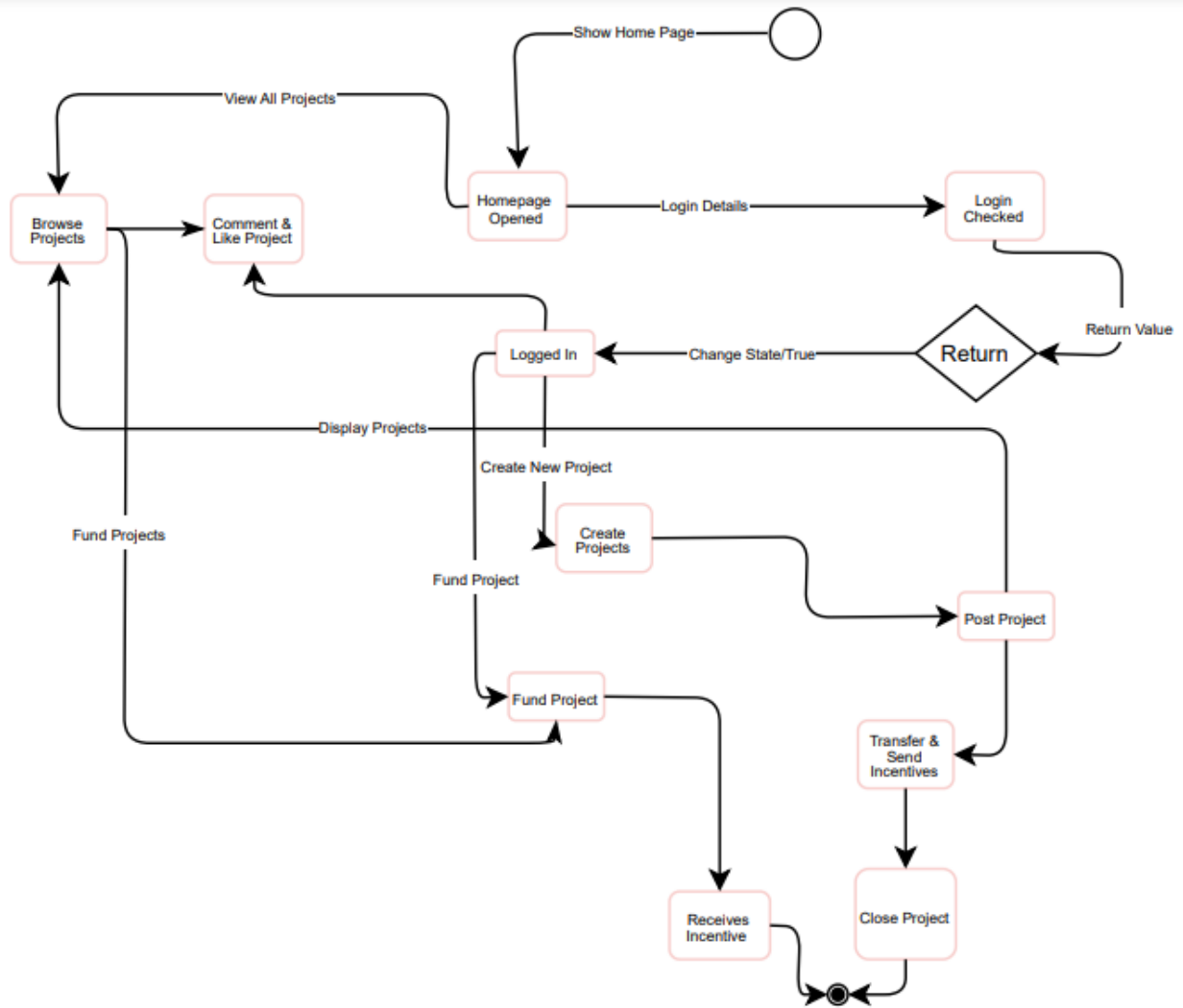Test contracts and deploy on Sepolia testnet.
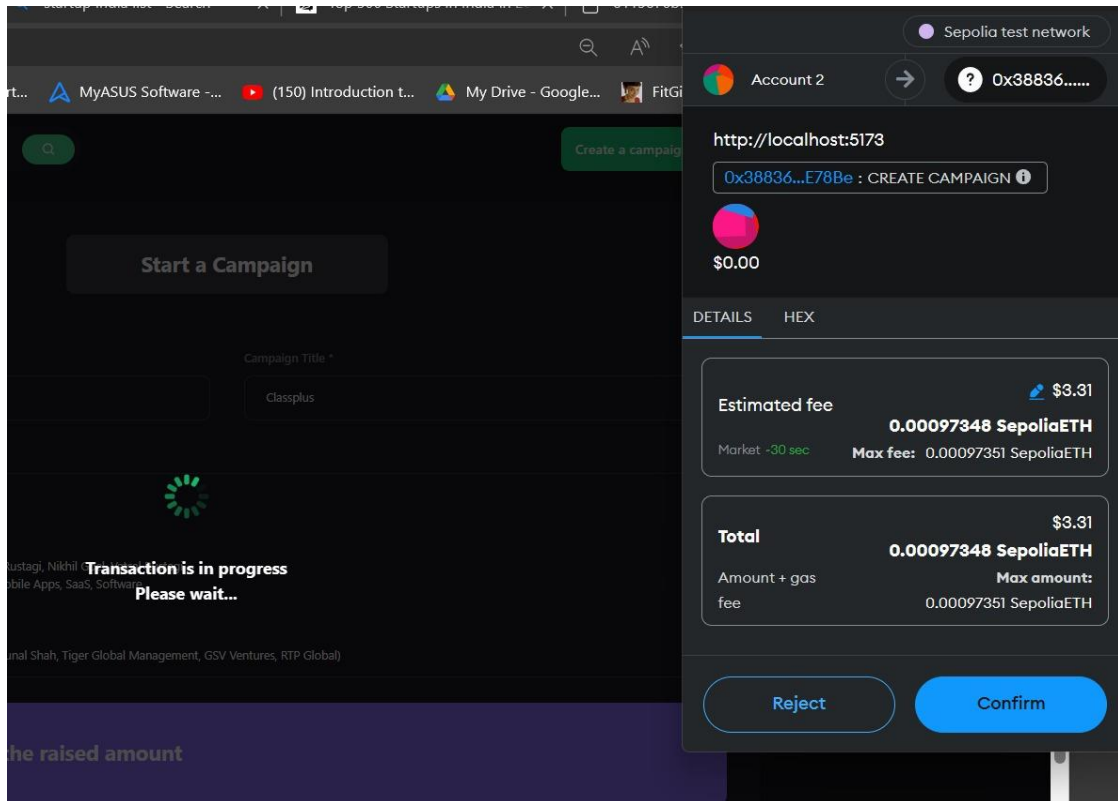
4.2 Flowchart

Figure 4.2: Flow Chart

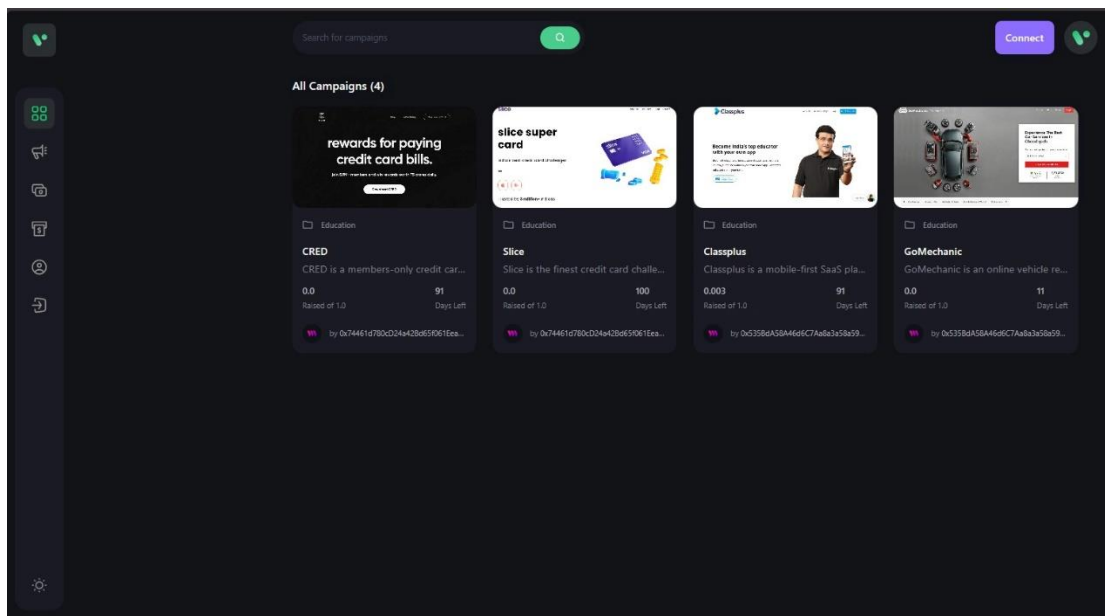**V. OUTPUT**

Figure 1: MetaMask Account
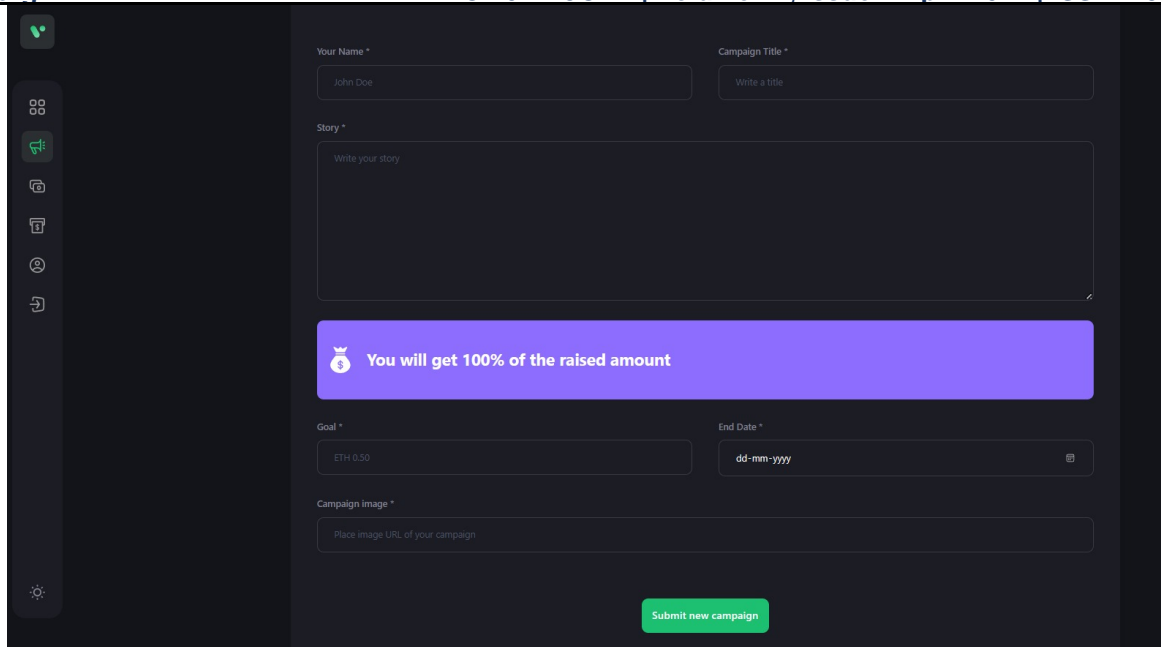

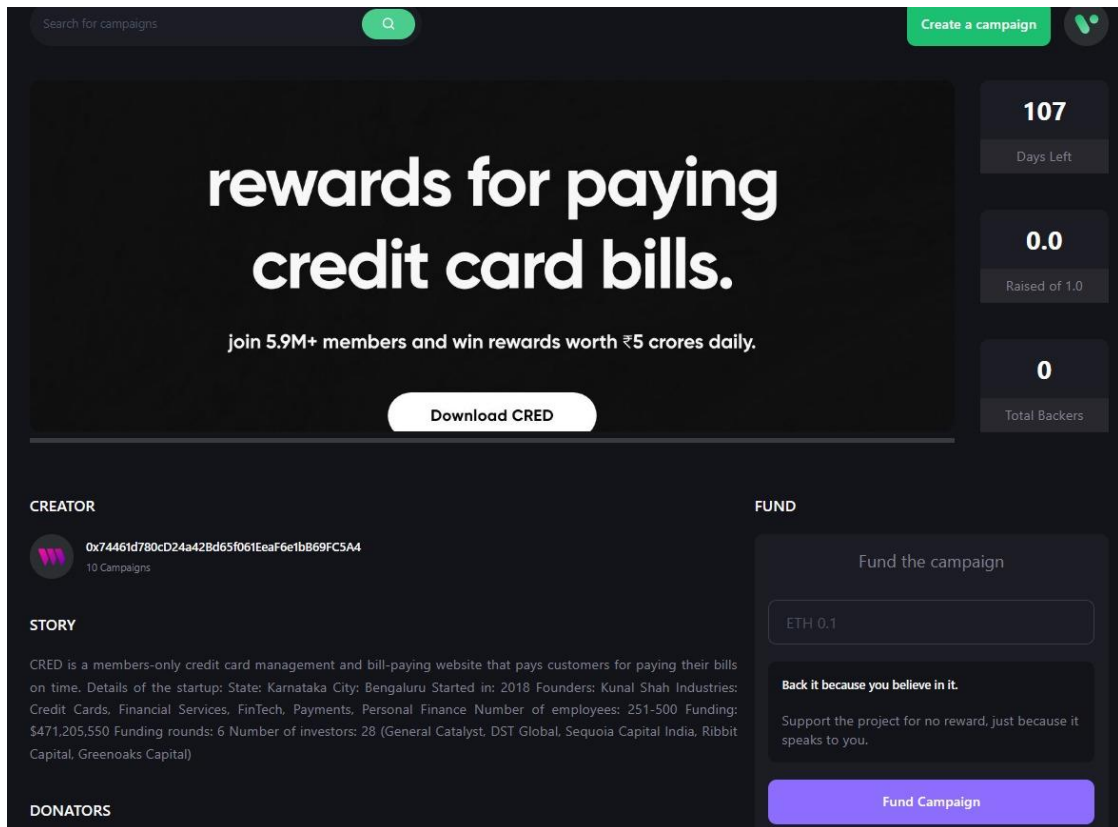**Figure 2: HomePage**

Figure 3: Create a Campaign Page
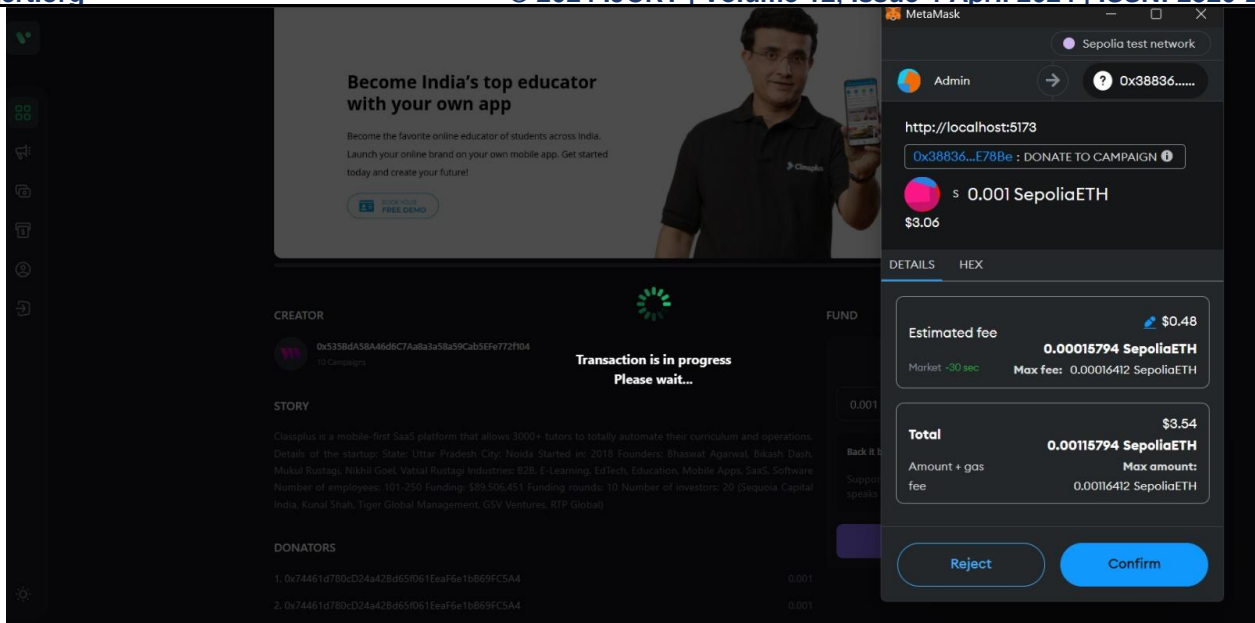

Figure 5: Campaign Details Page

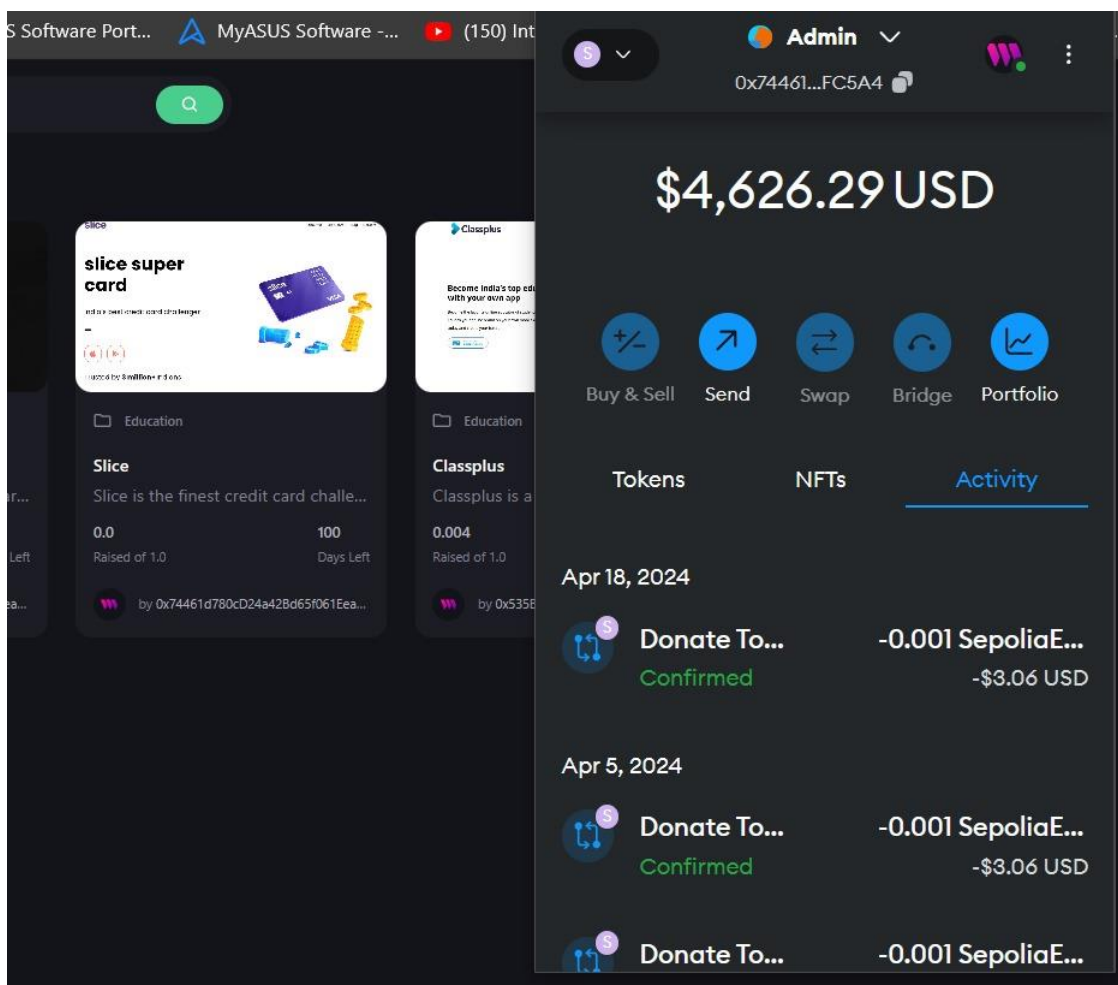**Figure 6: Backer's donation confirmation screen (MetaMask)**

Figure 7: Donation confirmed screen (MetaMask)

VI. FUTURE SCOPE

CryptoBacker will serve as a versatile platform for a wide range of projects, including technology startups, creative ventures, social causes, and entrepreneurial endeavors. Its core application will lie in providing a secure, transparent, and user-friendly environment that effectively addresses the persistent challenges encountered in the crowdfunding landscape. By bolstering trust and enhancing accessibility, it will empower both project creators and supporters to engage seamlessly in bringing their ideas and initiatives to life. Looking ahead, the future scope of CryptoBacker is expansive and promising. By staying agile and responsive, we can ensure that our platform remains at the forefront of crowdfunding, offering valuable solutions and experiences to users.

VII. CONCLUSION

In the dynamic landscape of modern finance and technology, our Crowdfunding Application, CryptoBacker, represents a beacon of innovation, offering a transformative vision for the future of crowdfunding. Throughout this exploration, we've uncovered the diverse facets of our platform, from its unique features to the advantages it extends to both project creators and supporters. It's clear that CryptoBacker stands at the forefront of crowdfunding, addressing long standing challenges and inefficiencies. With enhanced security, trust-building mechanisms, and a commitment to transparency, it redefines the crowdfunding experience and sets new industry standards.

VIII. ACKNOWLEDGMENT

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