Blockchain-Powered Charity Donation Platform Report

Introduction

An open-source initiative called the **Blockchain-Powered Charity Donation Platform** aims to update how charity donations are managed and tracked. Blockchain technology is being used in this initiative to securely and openly facilitate charitable donations. This platform guarantees that every gift is readily traceable, tamper-proof, and auditable in an age where openness and accountability are crucial.

Project Overview

The core objective of this project is to harness blockchain technology to enhance the transparency and security of charitable donations. Operating on the Ethereum blockchain and interfacing with it through the web3.js library, the **Blockchain-Powered Charity Donation Platform** boasts the following key features and functionalities:

Key Features

1. **Transparent Transactions**: The platform uses blockchain's decentralized ledger to publicly record all contribution transactions, allowing anybody to check the donation process's integrity.
2. **User-Friendly Interface**: A user-centric interface design prioritizes simplicity, making it straightforward for donors to contribute and for charities to manage their funds. This approach greatly enhances platform accessibility.
3. **Real-time Tracking**: Donors may track the status of their donations in real-time. This tool promotes confidence and openness in the nonprofit sector by allowing donors to see the effect of their donations.
4. **Security**: The platform promotes security and employs strong protections to protect user data and financial information. It ensures this by leveraging blockchain encryption, lowering the risk of fraud and data breaches.

Installation and Setup

To run this file:

1. **Clone the repository**: Execute `git clone https://github.com/Ag-hosh/Blockchain-Assignment.git` to acquire the project files.
2. **Install Dependencies**: Utilize `pip install -r requirements.txt` to install all required dependencies.
3. **Start the Server**: For Windows users, simply double-click the `./run.bat` batch file. Linux users should run the `./run.sh` script.
4. **Access the Platform**: Open your web browser and navigate to http://localhost:5000 to gain access to the web application.

Technology Stack

The **Blockchain-Powered Charity Donation Platform** is constructed using a diverse technology stack that guarantees robust functionality and an optimal user experience:

- **Flask**: Serving as the foundation of the web application, Flask is a lightweight web framework written in Python, managing routing and core functionality.
- **HTML, JavaScript, CSS**: HTML defines the page structure, JavaScript adds interactivity and dynamic functionality, while CSS styles the user interface elements.
- **web3.js**: This JavaScript library serves as an interface for interacting with the Ethereum blockchain. It facilitates communication with MetaMask, wallet balance retrieval, and transaction execution.
- **MetaMask**: A browser extension that empowers users to manage Ethereum wallets and engage with Ethereum-based applications. It establishes a secure connection to the user's wallet, facilitating safe transactions.
- **lottie-player.js**: This JavaScript library enhances the user experience by rendering animations through Lottie files, improving the visual appeal of transaction details popups.

File Structure

The project's file structure is meticulously organized for clarity and ease of development:

- **Reports folder**: It contains the report and the ppt for this assignment
- **run.sh / run.bat** : A batch file employed to initiate the Flask server.
- **./app.py** : The primary Flask application file responsible for routing and serving web pages.
- **templates/index.html**: This HTML file encompasses the user interface and JavaScript code for the Payment APP, the platform's core component.
- **templates/contact.html**: An HTML file offering contact information and a user inquiry form.
- **templates/about.html**: An HTML file providing comprehensive information about the project or organization, including its mission, team, and objectives.
- **templates/home.html**: Serving as the main homepage of the website, this HTML file contains essential content and navigation elements for users.

Functionalities

This project has the following essential features:

- **Connect Wallet**: Users may link their wallets to MetaMask to ensure safe access to their assets and transactions.
- **Wallet Balance**: The website fetches and shows the balance of the associated wallet, allowing users to keep track of their available cash.

- **Transfer Funds**: By inputting the recipient's address and the transfer amount, users may easily transfer funds to another Ethereum address. After a successful transfer, a transaction details window appears, displaying important transaction information.

Conclusion

The **Blockchain-Powered Charity Donation Platform** is a revolutionary project that uses blockchain technology to improve the security, accountability, and transparency of charity donations. This technology offers a user-friendly interface, automatic smart contracts, and real-time tracking, enabling both donations and organizations to have a significant impact. A dependable and effective contribution procedure is ensured by its persistent dedication to security and its solid technological foundation.

This idea has a great deal of potential to transform how charitable donations are handled and how records are kept, ultimately encouraging an atmosphere where nonprofits are more accountable and transparent.