SharePay - Group 1

Problem Description

Are you tired of the hassle of sharing subscription services with others and constantly having to coordinate payment details or transfer money to cover costs? It can be a time-consuming and frustrating experience. SharePay offers a solution to simplify the process and make sharing subscriptions easier and more seamless. With SharePay, you can easily manage shared subscriptions with multiple users and split payments between them without the need for constant communication and coordination. Say goodbye to the stress of sharing subscription services and hello to the convenience of SharePay.

SharePay

SharePay is a revolutionary decentralized application that utilizes the power of the Ethereum blockchain to simplify the process of sharing subscription services. With SharePay, you can effortlessly create a group with the people you wish to share subscription costs with. This platform allows you to split the costs evenly between group members, eliminating the need for complicated payment arrangements and reducing the burden of managing shared expenses. SharePay's secure and transparent blockchain technology ensures that all transactions are recorded immutably, providing complete transparency and accountability for all parties involved.

Technology Stack

-At the core of our platform are smart contracts written in Solidity, a programming language designed explicitly for the Ethereum blockchain. These smart contracts ensure the integrity and transparency of transactions between users.

-To interact with Ethereum nodes, we utilized Python programming language and the web3.py library. This allowed us to write functions that could interact with the Ethereum blockchain.

-For the frontend of our platform, we utilized React, a popular and powerful JavaScript library for building user interfaces. React is known for its efficiency and ease of use, allowing us to quickly build a responsive and dynamic front-end that provides users with an intuitive and engaging experience.

-For the backend of our platform, we utilized Django, a powerful Python web framework that enables rapid development and easy maintenance of web applications. With Django, we were able to build a secure and scalable back-end that provides a robust and reliable foundation for the SharePay platform

-To facilitate interaction with the Ethereum blockchain, we relied on Infura, a reliable and secure cloud-based service that eliminates the need for us to host our own nodes. This allowed us to focus on developing the SharePay platform without having to worry about the infrastructure behind it.

- Overall, our technology stack provides a robust and scalable foundation for the SharePay platform, ensuring a seamless and secure experience for all users.

How the program works

To get started, users simply fill out a form to create a group with the people they intend to share the subscription service cost with. Once the form is submitted, a smart contract is deployed on the Ethereum blockchain, and the address of the contract is sent to the group members via email to sign it using or sign feature.

Sign feature ensures transparency and accountability throughout the process. If a member approves, their share of the cost is deducted from their Ethereum wallet and sent to the contract address. If the money is not received in full, then the users are refunded their money, and the payment to the subscription service is not made.

Once the contract has received the total amount for the subscription, it will transfer the money to the subscription service wallet. This ensures that the subscription service is paid for in full while also preventing any individual from bearing the entire cost.

To ensure the process is repeated each time, the group members are sent an email reminder on the anniversary date, prompting them to approve the transaction and continue sharing the cost of the subscription service.

Testing

The platform is thoroughly tested by doing transactions over the testnet, for the testnet our selection was Sepolia faucet. For our other backend code we used some unit testing for basic functionalities, and some django frameworks are already tested by the framework provider. For frontend mostly we did manual testing, in future snapshot testing can be added for frontend.

Future improvements

We could explore integrating with third-party wallet providers like MetaMask, which offers a user-friendly interface for managing Ethereum wallets and interacting with the blockchain. By leveraging the security features of MetaMask, we could enhance the overall security of SharePay and provide a more seamless user experience.

With metamask to make the system more scalable and usable we could integrate ChainLink Orcales, for exchange rates, automation for triggering smart contracts, & job scheduling

Additionally, we could consider integrating additional subscription services into the SharePay platform, expanding the range of options available to our users. This could involve building partnerships with popular subscription services or exploring new and emerging subscription models that align with the needs and preferences of our user base.

Another area of improvement is the user interface. While our current platform provides a streamlined and intuitive experience, there is always room for improvement. We could explore new design approaches and features that enhance the overall user experience, such as interactive data visualizations or personalized account dashboards.

Finally, we could consider adding new functionality to the smart contract to enhance its capabilities and provide greater flexibility for users. For example, we could add features that allow users to set custom payment schedules or adjust the proportion of the subscription cost paid by each member of the group.

Overall, there are many exciting opportunities for future improvement and expansion of the SharePay platform. By staying attuned to the needs and preferences of our users, and leveraging emerging technologies and trends in the subscription space, we can continue to enhance the value and utility of SharePay for all members of our community.

Summary
SharePay is a decentralized application built on the Ethereum blockchain, designed to simplify the process of sharing subscription services. The platform allows users to create a group with the people they intend to share the subscription cost with, eliminating the need for individual payments and ensuring fairness and transparency throughout the process.

Using smart contracts, SharePay securely manages the transfer of funds between group members and the subscription service provider. The platform also features a user-friendly interface, with a simple form-based approach that eliminates the need for user accounts or signups.

Looking to the future, SharePay has several areas of potential improvement, including enhanced security features, expanded functionality, and improved user experience. By continuing to innovate and listen to the needs of our users, SharePay aims to provide a valuable and seamless experience for sharing subscription services in a decentralized and secure manner.