



BLOCKCHAIN BASED DECENTRALISED DROPBOX

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Abstract: There is an open source Dropbox clone for hosting files online. Using the best Dropbox alternative, you can provide your customers secure file sharing, group collaboration, storage choices, and a variety of other online services. With the help of Dropbox, you can provide your users a platform that offers cloud storage, file synchronisation, personal clouds, and several other options for managing and storing their files. You may give your clients effective picture and video management capabilities, in addition to a number of online photo storage options, by using a Dropbox clone. These features will let your clients manage, store, and organise all kinds of photos and videos. You may do this to enable your users to store, control, arrange, and access all of their files.

Index Terms: Blockchain , HardHat , IPFS Server , Solidity , Javascript frameworks (React.js and Node.js)

I. INTRODUCTION

The title of this article appears to relate to a blockchain-based database that blockchain developers typically use to store their information or NFTs. File storage systems may be built using a variety of servers, but they can be categorised into two categories: centralised and decentralised. Blockchain, where data is kept in blocks without the involvement of an organisation or other entities and is not controlled by any of them, supports decentralised servers. Centralised servers are readily modified or deleted and are owned by an organisation. On a server that is built on a blockchain, each file is produced as meta-data. We now have meta-data available that can be used to make smart contracts, mint NFTs, and do other things.

A. MOTIVATION

I made the decision to work on the decentralised drop box, which allows for file sharing, file storage, and scripting using Java and Solidity. The main driving force behind this is that since there is no central authority that can recover your data, blockchain-based storage plays a significant role in comparison to central authorities who have large access to the data. The file is shared by uploading it to an IPFS server, which creates a hash id, and using that hash id to start a smart contract.

B. PROBLEM DEFINITION

We develop file storage and sharing based on blockchain storage utilizing an IPFS server for HashID, then use the hash id to deploy a smart contract for uploading and sharing the content.

C. ADVANTAGES & LIMITATIONS

1. ADVANTAGES

1. Central Authority no access to files.
2. Easy upload and sharing system
3. More Security than previous systems

2. LIMITATIONS

1. Once uploaded cannot be deleted
2. Cannot be used for all file types
3. Slow Upload and loading



D. APPLICATIONS & USE CASES

APPLICATIONS

1. Immutable file storing app, where in user can add any files to the database without the fear of file being altered
2. Decentralised Storage of the files
3. Hash Associated with all files for security

USE CASES

1. Store important files
2. Manage digital identities efficiently
3. improvements in data Security

E. LITERATURE REVIEW

1. A massive increase in data has been caused by the Internet's rapid growth, and the dependable transmission, sharing, and storage of data have become the main challenges in data sharing. In order to provide data security, user rights protection, and quick data processing, this article integrates the decentralised and irreversible characteristics of the Ethereum blockchain with IPFS distributed storage technology. Additionally, a platform for data interchange is suggested. Give the present data interchange a new technological application environment.

2. In recent years, smart contracts have grown immensely popular. Blockchain technology saw a significant improvement in the execution of smart contracts after Ethereum's introduction in 2015. Security, scalability, and reliability are just a few of the problems that face smart contract execution. The generation of smart contracts does not adhere to the conventional software development life cycle. This makes it difficult and expensive to do thorough testing for apps that incorporate smart contracts. Numerous researchers are drawn to the most well-known topics, like code vulnerability analysis and smart contract testing. meant to assess the methods and procedures included in a number of linked publications from the IEEE, science direct, etc. There were outstanding issues with each of the chosen research projects.

3. Despite being one of the best at storing enormous amounts of data, the centralised storage architecture of cloud computing is insecure. On the other hand, a decentralised cloud storage solution like blockchain provides data security. Any computer connected to the internet may join and create a peer network, which can optimise resource usage. Because each node in the network maintains a copy of it, the distributed peer-to-peer technology known as blockchain is unchangeable. The recommended solution encrypts the user's file and distributes it across a number of network peers using the IPFS (InterPlanetary File solution) protocol. Hashes are generated by IPFS. The hash value, which is recorded on the blockchain, serves as a means of identifying the path to the file.

4. Blockchain technology has made it possible to keep a decentralised, impermeable, immutable, and well-organized record of transactional events. When data storage needs surpass the majority of blockchain systems' existing capacity, using such a ledger may be difficult. We are trying to find a solution to the problem of maintaining system speed while storing massive volumes of decentralised data. In order to reduce the high cost of storage, this article recommends adopting IPFS distributed hash table (DHT) technology to store data immutably and decentralised. Built on immutable data, a storage system based on blockchain and other storage systems should be able to delete data from users who are harming the DHT. DHT technology shortens the processing time, increasing efficiency.

II. METHODOLOGY

A personal blockchain, a local development blockchain that can be used to replicate the behaviour of a public blockchain, serves as the dependence. Ganache is a personal blockchain for Ethereum development that we utilised for our project. It enables you to deploy smart contracts, create applications, and conduct testing. It is accessible as a desktop programme and command-line tool on Windows, Mac, and Linux

A. LIBRARIES & FRAMEWORKS

1. REACT.JS

React is a frontend JavaScript framework that is free and open-source for creating user interfaces based on UI components.



2.SOLIDITY.JS

Smart contracts may be implemented using Solidity, an object-oriented, high-level language. Programmes known as smart contracts control how accounts behave in the Ethereum state.

3.NODE.JS

Node.js is a javascript based frameworks. It is used for writing backend language. Which further interacts with the database server.

4.WEB3.JS

It is a collection of libraries that allow you to interact with a local or remote ethereum node using HTTP, IPC.

B.FUNCTIONAL REQUIREMENTS

1. User Interfaces Home page

Registration and login page
Upload File/document Get Shareable URL

2. Hardware Interfaces

The entire software requires a completely equipped computer system including monitor, keyboard, and other input output devices.

3. Software Interfaces

The system can use Microsoft as the operating system platform. System also makes use of certain GUI tools. To run this application, we need Nodejs, Truffle framework for compiling the smart contract Heroku /GitHub as server. To store data, we need IPFS server.

C. NON-FUNCTIONAL REQUIREMENTS

1. Performance Requirements

The performance of the system lies in the way it is handled. Every user must be given proper guidance regarding how to use the system. The other factor which affects the performance is the absence of any of the suggested requirements.

2. Safety Requirements

To ensure the safety of the system, perform Regular monitoring of the system so as to trace the proper working of the system. An authenticated user is only able to access system.

3. Security Requirements

Any unauthorized user should be prevented from accessing the system.
Password authentication can be introduced.

Software Quality Attributes

Accuracy: -

Blockchain allows the users to have the accurate information as it has a hash value associated with it and any intruder trying to change the file results in the change of hash value which states that the file is a different one.

Reliability: -

Due to the aforementioned factors, the suggested system will be very reliable. The system will be more reliable since there will be better information storage going forward.



E. SYSTEM DESIGN

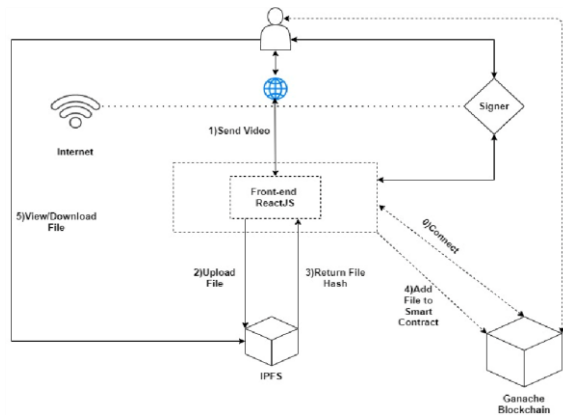


Figure 1: System Architecture

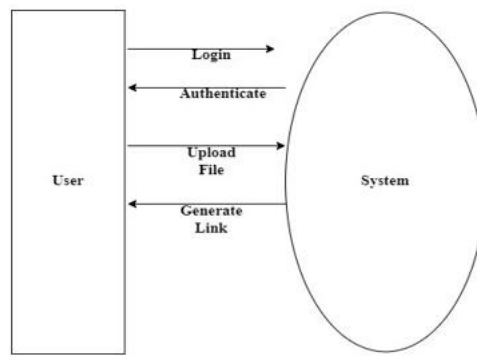


Figure 2: Data flow diagram

III. CONCLUSION

In this study, we develop a blockchain based decentralized dropbox. We needed to develop a smart contract in order to build a decentralized dropbox. We did this using solidity which is a high-level language for implementing smart contract. In order to link smart contracts with the frontend and backend of the app, we had used web.js, an ethereum based library. In our ganache network wallet, we used fake fossets for signing the smart contract. By developing this Dapp, we demonstrated how we can use blockchain in order to store photos and video and share it.

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