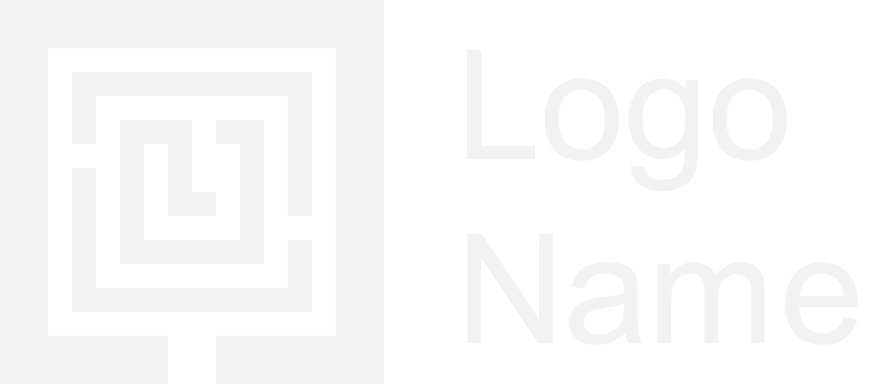


İstanbul Kültür Üniversitesi

Software Engineering

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| APXEIA  Blockchain |
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What is Blockchain?

Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system.

A blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. Each block in the chain contains a number of transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant’s ledger. The decentralized database managed by multiple participants is known as Distributed Ledger Technology (DLT).

Blockchain is a type of DLT in which transactions are recorded with an immutable cryptographic signature called a hash.

How Does A Blockchain Work?

The goal of blockchain is to allow digital information to be recorded and distributed, but not edited. In this way, a blockchain is the foundation for immutable ledgers, or records of transactions that cannot be altered, deleted, or destroyed. This is why blockchains are also known as a [distributed ledger technology (DLT)](https://www.investopedia.com/terms/d/distributed-ledger-technology-dlt.asp).

First proposed as a research project in 1991, the blockchain concept predated its first widespread application in use: Bitcoin, in 2009. In the years since, the use of blockchains has exploded via the creation of various [cryptocurrencies](https://www.investopedia.com/terms/c/cryptocurrency.asp), [decentralized finance (DeFi)](https://www.investopedia.com/decentralized-finance-defi-5113835) applications, [non-fungible tokens (NFTs)](https://www.investopedia.com/non-fungible-tokens-nft-5115211), and [smart contracts](https://www.investopedia.com/terms/s/smart-contracts.asp).

Blockchain in cloud storage

Blockchain based cloud projects examples

1.storj

Storj is an open source, decentralized file storage solution. It uses encryption, file sharing, and a blockchain-based hash table to store files on a peer-to-peer network. The goal is to make cloud file storage faster, cheaper, and private.

Traditional cloud storage solutions, like Dropbox or Google Drive have limitations. While files are backed up redundantly, bandwidth from a data center or unexpected outages can restrict access to your files. There’s also the issue of privacy. These companies have control over your files, including the ability to access them.

The Storj project uses blockchain and peer-to-peer networks to solve these problems. It distributes the files so redundancy is well established. It also guarantees you’re the only one who can access your files.

An important distinction to make at the beginning of this article is between open source Storj and Storj Labs, the for-profit company. Anyone can create their own instance of the open-source software that runs Storj. Storj Labs, however, has already done that, and they have a network of thousands of users. Storj Labs charges for use of that network.

Website: <https://www.storj.io/>

Source code: [Makefile - storj/storj - Sourcegraph](https://sourcegraph.com/github.com/storj/storj/-/blob/Makefile)

2.Sia

Sia uses blockchain to provide a decentralized data storage platform that encrypts and distributes files across a global P2P network. The Sia client software -- available for Windows, Linux and macOS -- breaks each file into 30 segments, which it then distributes to different hosts.

The software uses Reed-Solomon erasure coding to ensure redundancy and make it possible to recover a file from only 10 of its segments. The software also uses the open source Threefish algorithm to [encrypt the segments](https://support.sia.tech/renting/managing-your-files#uploading) before sending them to the storage hosts. Renters use Sia to purchase storage, and hosts use Sia as collateral when storing files.

Sia software is completely open source and includes an API that developers can use when building applications. Setting up Sia -- as either a renter or host -- is a straightforward, well-documented process, which makes it stand out from competitors.

Sia provides a decentralized storage marketplace in which storage providers compete for business. As a result, pricing is less predictable. According to Sia, 1 TB of storage should cost under $2 per month (paid with Siacoin), but renters should also be aware of additional costs, such as contract formation fees and bandwidth fees for uploading and downloading files.

Website: <https://www.storj.io/>

Source code: [Sia/crypto at master · NebulousLabs/Sia · GitHub](https://github.com/NebulousLabs/Sia/tree/master/crypto)

3.Utopia

The Utopia P2P network is designed to act as a tool for reclaiming online freedom and anonymity. It provides secure communications in a way that prevents government and third-party surveillance. Online communications are provided by Curve25519 high-speed elliptic curve cryptography, whereas local storage is encrypted with [256-bit AES](https://www.techtarget.com/searchsecurity/definition/Advanced-Encryption-Standard).

Utopia supports two different cryptocurrencies -- Crypton and Utopia USD. Crypton is Utopia's preferred currency and is designed to be decentralized and untraceable, whereas Utopia USD is more stable because its value is tied to the U.S. dollar.

Utopia users store data in encrypted containers. Utopia defines an encrypted container as "encrypted, password protected storage of your utopia data, such as your private key, uMails, uWallet, files, chat history, contacts and transactions history." Utopia is available on Windows, MacOS, Linux, iOS and Android.

Website: <https://utopia.app/>

Source code: <https://github.com/socketry/utopia>

Blockchain Code in Apxiea:

Text

Description automatically generated

References

* <https://www.techtarget.com/searchstorage/tip/Comparing-4-decentralized-data-storage-offerings>
* <https://www.storj.io/>
* <https://sia.tech/>
* <https://utopia.app/>
* <https://github.com/>