Project Design Phase-I

Solution Architecture

Team ID	NM2023TMID04427
Project Name	Project – Tracking Public Infrastructure And Toll Payment Using Blockchain

Main Advantages Of Blockchain Technology :

- Since there's no central authority to oversee operations, the blockchain is an ideal register for joint business ventures.
- The digital signature and verification process used in blockchains helps prevent fraudulent activity.
- Information isn't centralized, preventing it from being lost.

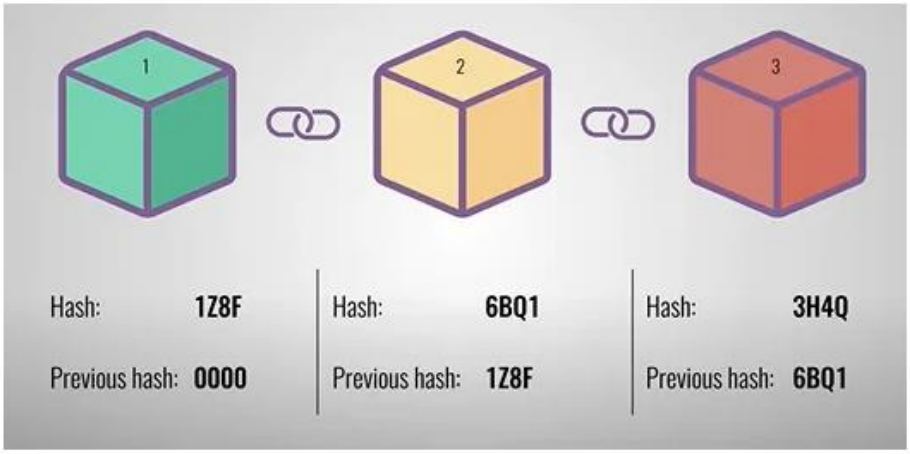
What The Blockchain Is And How It Works :

This technology was originally described in 1991 by a group of researchers and was originally intended to timestamp digital documents so it wouldn't be possible to backdate or tamper with them.

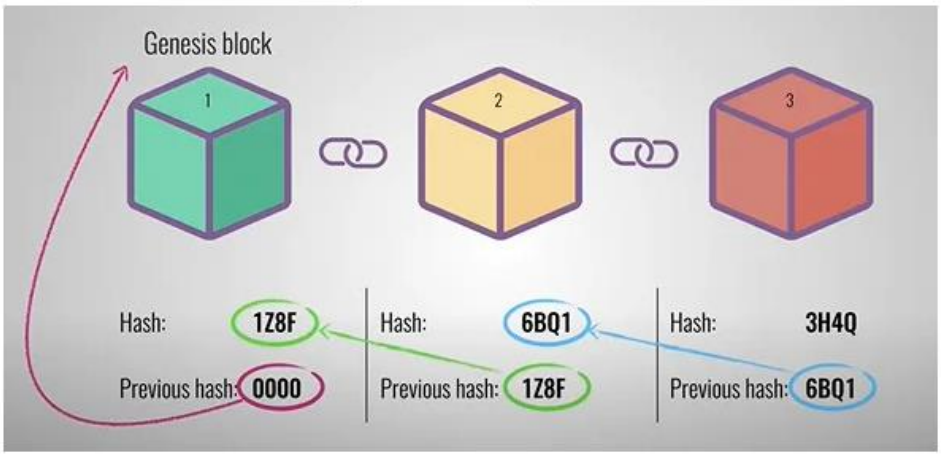
Each block in a blockchain contains some data, the hash of the block itself, and the hash of the previous block. The data stored inside a block depends on the type of blockchain.

How To Write Acceptance Criteria: Examples And Best Practices

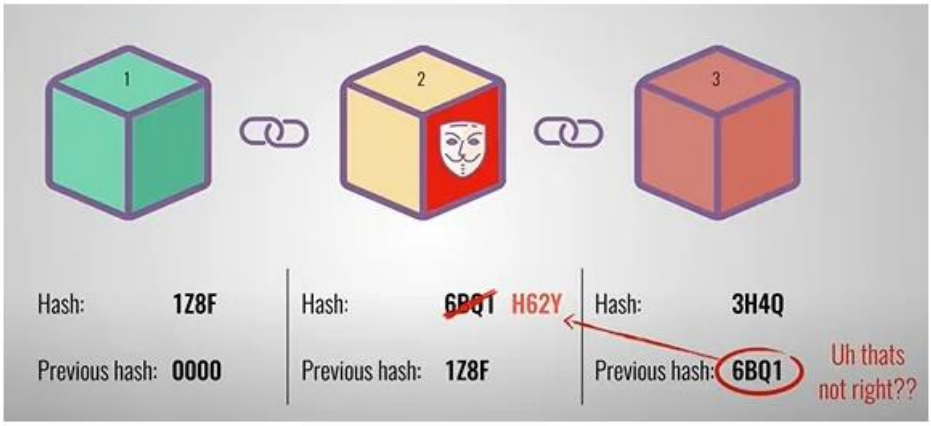
The third element inside each block is the hash of the previous block. This effectively creates a chain of blocks, and it's this technique that makes a blockchain so secure. Let's look at an example.



block number 3 points to block number 2, and block number 2 points to block number 1. Now, the first block is a bit special, as it cannot point to previous blocks because it's the first. This block is called the genesis block.



This causes the hash of that block to change. In turn, that will make block 3 and all following blocks invalidbecause block 3 will no longer store a valid hash of the previous block.

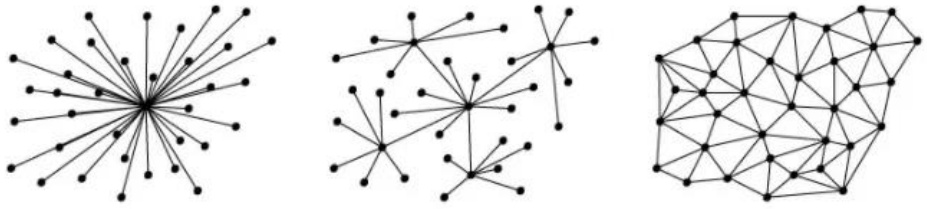


Key Characteristics Of The Blockchain Architecture :

- **Cryptography** — Blockchain transactions are verified and trustworthy because of complex computations and cryptographic proof between the parties.
- **Immutability** — Records in a blockchain can't be modified or deleted.
- **Provenance** — It's possible to trace the origin of each transaction in the blockchain ledger.
- **Decentralization** — Every member of the blockchain structure is able to access the entire distributed database. Unlike in a centralized system, a consensus algorithm is responsible for network management.
- **Anonymity** — Every member of the blockchain network has a generated address, not a user ID. This preserves the anonymity of users, especially in a public blockchain.
- **Transparency** — The blockchain system is unlikely to be damaged as it takes enormous computing power to completely rewrite the blockchain network.

Blockchain Architecture Explained :

A blockchain is an open financial ledger or record in which every transaction is authenticated and authorized. A blockchain is designed as a decentralized network of millions of computers, commonly referred to as nodes.



Creating A Blockchain Network :

- Gold mining companies
- Government institutions
- Gold transporters
- Gold sellers
- Goldsmiths