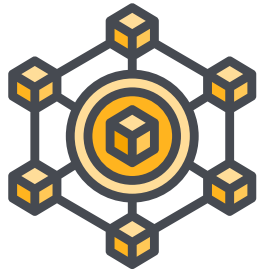
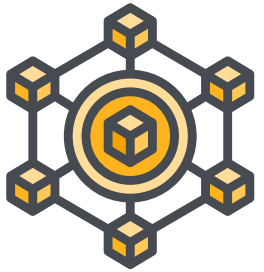
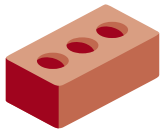
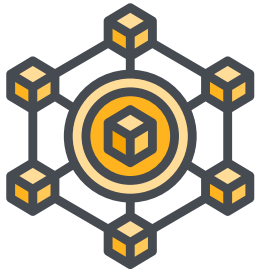
How Blockchain Works? ⚙️



- Blockchain is a distributed digital ledger where transactions are stored in a secure and transparent way.
- Data is grouped into blocks that are connected in a chain using cryptographic techniques.
- Each block contains a set of transactions, a timestamp, and a unique cryptographic hash.
- Once a block is added, it is immutable (cannot be changed or deleted).
- Security is ensured through cryptography and consensus mechanisms.



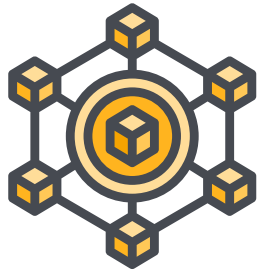
 Blocks



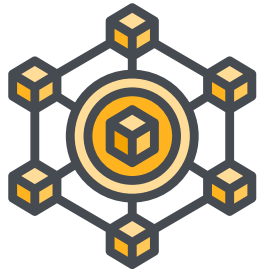
- A block is a container of data (mainly transactions) in the blockchain.
- Each block contains:

1. Transaction details
2. A timestamp

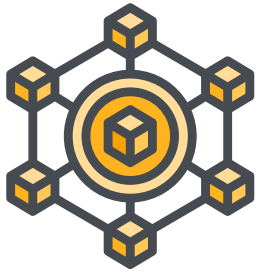
- A reference to the previous block's hash
- Blocks are sequentially linked, forming the blockchain.
- Blocks ensure that the ledger is organized and verifiable.



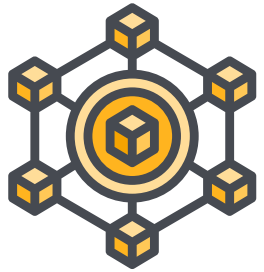
🔐 Hashes



- A hash is a unique digital fingerprint generated by a cryptographic function.
- Each block has its own hash value and also stores the hash of the previous block.
- If any data in a block is changed, the hash changes immediately.
- This makes the blockchain tamper-proof, because altering one block would break the chain.



⛏️ Mining



- Mining is the process of validating transactions and adding new blocks to the blockchain.
- In Proof of Work systems (like Bitcoin):
- Miners solve complex mathematical puzzles.
- The first miner to solve the puzzle adds the block to the chain.
- As a reward, miners receive cryptocurrency (e.g., Bitcoin).
- Mining ensures that the blockchain remains secure, decentralized, and updated.