Blockchain as public ledger

How Distributed Ledgers Work

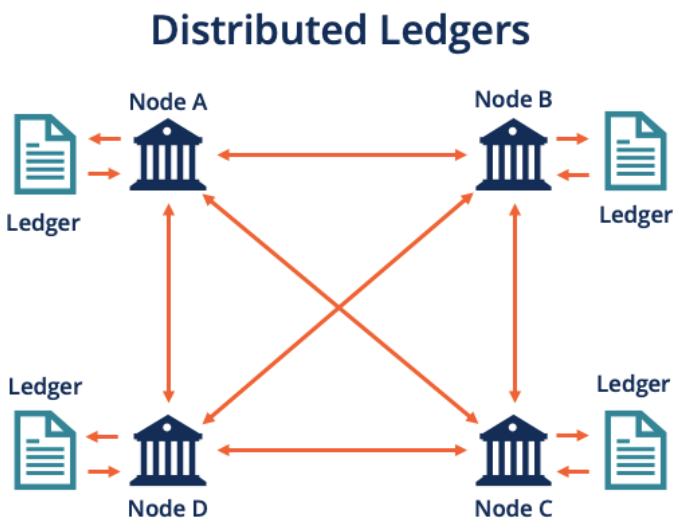

Figure 1.21 illustration of distributed ledger

- Distributed ledgers are held, reorganized, and controlled by individuals called nodes.
- The database is constructed independently by each node.
- Every transaction occurring on the network is processed, and a conclusion on thedevelopment of the database is created by each node.
- Based on the transaction, voting is carried out on the changes completed on the database. All nodes participate in the voting, and if at least 51% of them agree, thenew transaction is accepted on the database.
- Afterward, the nodes update the versions of the database so that all the devices ornodes will be of the same version.
- The new transaction is written onto a block on the blockchain.
- Nodes in Proof-of-Work blockchain are also called miners.
- When a miner successfully puts a new transaction into a block, they receive a

reward.

- It requires a dedicated 24×7 computer power.
- It is the responsibility of miners to compute the cryptographic hash for new blocks.
- Whoever, among the miners, successfully finds the hash first, gets the reward.
- Miners dedicating more computational power to find the hash will be moresuccessful.
- However, as blocks keep generating, it becomes more difficult to find subsequenthash scales.
    - The goal is to keep a constant speed of generating the blocks.

Benefits of Distributed Ledgers

- Highly transparent, secure, tamper-proof, and immutable. After records arewritten into distributed ledgers, they cannot be altered by any other party.
- The need for a third party is eliminated
- Inherently decentralized
- Highly transparent

Advantages of Distributed Ledgers

- It is secure because there is no third-party intervention.
- It is immutable once recorded cannot be intervened.
- The data is distributed so it is tamper-proof.

Disadvantages of Distributed ledger:

- The distributed ledger is spread along with the nodes so making it vulnerable to attack.
- The transaction cost is high because of a larger network.
- The transaction speed is low because of the operation of a large number of nodes.