

Blockchain Assignment 2

- 1) Differentiate permissioned and non-permissioned blockchain.
- Ans
Permissionless Blockchain
1. Open network available for anyone to interact and participate in consensus validation. Fully decentralized across unknown
 2. Public, trustless.
 3. Full transparency of transactions, based on open source protocols
 4. Development via open source
 5. Mostly anonymous, with some exceptions
 6. Privacy depends on technological limitations or innovations
 7. No central authority
 8. Often involves digital asset or token for incentives
 9. Broader decentralization, extending access across more network participants
 9. Highly transparent, which is beneficial for speed and reconciliation across unknown parties
 10. Censorship resistant, due to accessibility and participation across locations and nationalities
 11. Security resilience, since attackers cannot target a single repository, and it is costly and difficult to corrupt 51% of the network
 12. Less energy efficient because network-wide transaction verification is resource-intensive
 13. Slower and difficult to scale, as high volume can strain network-wide transaction verifications
 14. Less user privacy and information control

Permissioned Blockchain:

1. Closed network. Designated parties interact and participate in consensus validation. Partially decentralized (i.e., distributed across known parties).
2. Private, permissioned sandbox.
3. Controlled transparency, based on organizations' goals
4. Development via private entities
5. Not anonymous
6. Privacy depends on governance decisions
7. No single authority, but a private group authorizes decisions
8. May or may not involve digital assets or tokens
9. Incremental decentralization, but participation from multiple businesses helps mitigate risks of highly centralized models
10. Stronger information privacy because transaction information is only available based on permissions
11. Highly customizable to specific use cases through diverse configurations, modular components and hybrid integrations
12. Faster and more scalable, since fewer nodes manage transaction verification and consensus
13. Limited decentralization because a network with fewer participants increases risk of corruption or collusion
14. Risk of override, since owners and operators can control or change the rules of consensus, immutability, or mining
15. Less transparent to outside oversight, since participants are limited and operators determine privacy requirements

2)

Give examples of permissioned blockchain

Ans

The examples of permissioned blockchain are Quorum and corda.

A permissioned blockchain is a distributed ledger that is not publicly accessible. It can only be accessed by users with permissions. The users can only perform specific actions granted to them by the ledger administrators and are required to identify themselves through certificates or other digital means.

You might consider the addition of permissioned users as an extra blockchain security system. Administrators maintain an access control layer to allow certain actions to be performed only by certain identifiable participants. Records are kept within the blockchain of who is involved in the transactions. This makes permissioned blockchains different from public blockchains.

3)

Differentiate Ethereum, Ripple and corda.

Ans

Ethereum

- 1) Public/ Private/ Permissioned: Public Blockchain No permission is needed to access network content
- 2) Smart contract: Solidity Programming Language
- 3) Governance: carried out by developers (DAO)
- 4) Consensus: Relies on Proof of stake for decision making
- 5) Consensus Protocol: PoW/ PoS
- 6) Currency: Ether
- 7) Use case: Popular with generalized applications and mostly used for P2P and B2C operations.

Corda

- 1) Public/ Private/ Permissioned: Public Private Blockchain
Permission is needed to access network content
- 2) Smart contract: Kotlin Programming Language
- 3) Governance: R3 Company in charge
- 4) Consensus: Making decisions is limited to those parties engaged in a transaction
- 5) Consensus Protocol: Notary Based
- 6) Currency: No native cryptocurrency
- 7) Use case: Runs on a specialised distributed platform for the financial industry needs

Ripple

- 1) Public/ Private/ Permissioned: Public Public Blockchain
No permission is needed to access network content
- 2) Smart contract: C++ Programming Language
- 3) Governance: Ripple Labs
- 4) Consensus: Participating nodes verify the authenticity of a transaction by conducting a poll
- 5) Consensus Protocol: Probabilistic Voting
- 6) Currency: XRP
- 7) Use Case: Runs on a specialised distributed platform for the financial industry needs