

Assignment No :

- Title : Write a survey report on types of blockchains and its real time use cases.
- Objective : Students should be able to learn new tech. such as metamask. Its app. and implementations.
- Prerequisite : 1. Basic knowledge of cryptocurrency
2. Basic knowledge of distributed computing concept
3. Working of blockchain.

• Theory :

There are 4 types of blockchain :

- 1] Public blockchain
- 2] Private blockchain
- 3] Hybrid blockchain
- 4] Consortium blockchain

1] Public blockchain : As the name suggests this blockchain is open to the public, which means it is not owned by anyone. All the computer in the network hold the copy of other nodes or block present in the network. In this public blockchain, we can also perform verification of transactions or records.

* Advantages :

- 1] Trustable
- 2] Secure
- 3] Anonymous nature
- 4] Decentralized

* Disadvantages :

- 1] The rate of transaction process is very slow.
- 2] High energy consuming.

2] Private blockchain: These blockchains are not as decentralized as the public blockchain only selected nodes can participate in the process, making it more secure than the others. They are open to some authorized users only. These blockchains are operated in a closed network.

* Advantages:

1] The rate of transaction is high.

2] The size of network can be decided manually - scalable

3] It is more balanced as only some users have the access to the transaction.

* Disadvantages:

1] Security is a big concern

2] Trust building is one of the main disadvantages due to its central nature.

3] Use cases: With proper security and maintenance, this blockchain is a great asset to secure info. without exposing it to the public eye.

Ex: Hyperledgers, Corda.

3] Hybrid blockchain: It is the mixed content of private and public blockchain, where some part is controlled by some organization and other parts are made visible as a public blockchain.

* Advantages:

1] It is hybrid in nature. It cannot be hacked as 51% of users don't have access to the network.

2] Transactions are cheap as only a few nodes verify the transaction.

3] It is highly customizable and still maintains integrity, security.

* Disadvantages:

- 1] It faces some difficulty in terms of efficiency
- 2] There is possibility that someone can hide info. from the user.
- 3] Use case : It provides a greater solution to the health care industry, government, real estate & financial companies.

4] Consortium blockchain : It is a creative approach that solves the needs of the organization. This blockchain validates the transaction and also initiates or receives transactions. In this type, more than one organization manages the blockchain.

✳ Advantages :

- 1] Limited number of users make verification fast.
- 2] More secure.
- 3] Privacy is maintain
- 4] It is flexible.

✳ Disadvantages :

- 1] It can be hacked if organization becomes corrupt.
- 2] If few nodes are getting compromised there is a greater chance of vulnerability.
- 3] Use cases : It has high potential in business, banks & other payment processors. Ex : Tendermint & multichain.

• Conclusion : In this way we have explored types of blockchain and its app. in real time.

Assignment No :

- Title : Write a program to create a business network using Hyperledger.
- Objective : Students should be able to learn hyperledger its app. and implementations.
- Prerequisite : 1. Basic knowledge of cryptocurrency.
2. Basic knowledge of distributed computing concept.
3. Working of blockchain.

• Theory :

Hyperledger composer is an extensive, open development toolset and framework to make developing blockchain app. easier. The primary goal is to accelerate time to value, and make it easier to integrate your blockchain app. with the existing business systems.

Key concepts :

1. Blockchain State Storage
2. Connection profiles
3. Assets
4. Participants
5. Identities and ID cards
6. Transactions
7. Queries
8. Events
9. Access control
10. Historian registry

• Steps to create Hyperledger composer app. :

Step 1 : Start hyperledger composer online version of Local. Click on deploy a new business network.

Step 2 : Select empty business network

Step 3 : Fill basic information, select empty business network and click "deploy" button from right panel

Step 4 : Connect to "hardware-assets" business network that we have just deployed.

Step 5 : Click on "+Add a File..." from left panel and select "model file (.cto)"

Step 6 : Click on "+Add a File..." from left panel and select "script file (*.js)"

Step 7 : Permission.acl file sample is already available. Add following code in permissions.acl file.

Step 8 : Now, it's time to test our hardware assets business network. Hyperledger composer gives "Test" facility from composer panel itself. Click on "Test" tab from top panel.

Step 9 : Create Assets. Click on "Hardware" from left panel and click "+ Create New Assets" from right top corner and add following code. Click on "create New" button.

Step 10 : Let's create participants. Click "Employee" & click "+ create New Participants" and add code.

Step 11 : It's time to do transaction. Click on "Submit Transaction" button from left panel.

- Conclusion : In this way we have learnt about hyperledger and its use in the business world.