Hyperledger Febric Composer :-

open source project or) platform for creating Block chain appl.

=> HyperLedger Febric composer (HFC)

=> Endorser ⇐ accept (or) reject the Transaction

* Endorser people node accept the transaction and put in to the block. otherwise it will be reject

=> commiter Node => It will validate the transaction.

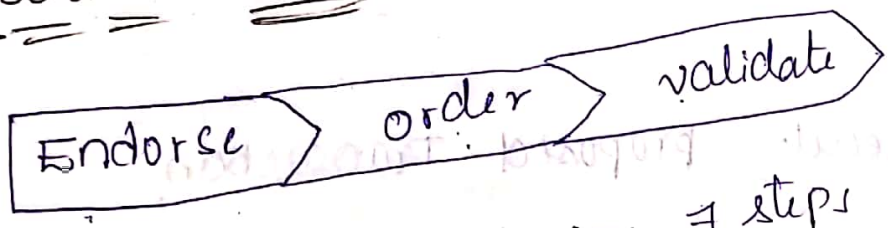
=> Ledger -> It consists the two blockchains database

=> Chaincode -> It will store the blockchain

= Events : It give the notifications for example adding new node) block chain. and accepts the transaction. It will give the notification.

[HFC : HyperLedger febric composer)

Transaction flow :-



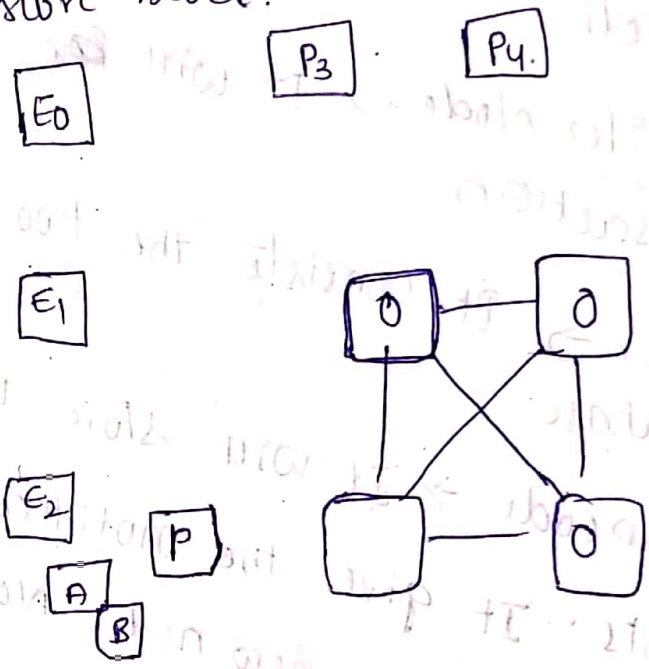
Transaction flow contains 3 steps

Step : Propose Transaction

Client can generate the transaction that can store in the BLOCK chain

⇒ And the transaction will send the Endorser peer. Each endorser having it own Leader and it own chain.

⇒ E_0, E_1, E_2 Must be signed. accepted the transaction. Suppose the transaction is not accepte the transaction. ~~the transaction will be dropped. if any two Endorser with accepte will be dropped.~~ it will be store block.



⇒ P_3, P_4, commiting peer. these will not endorser.

⇒

Step2:- Execute proposed Transaction.

⇒ E_0, E_1, E_2 will Execute the Transaction.

* Each execution will capture the set of Read and written data the smart contracts is Read Write sets

=> Send the transaction client.

=> Transaction must be signed & Encrypted. it will send to client application.

Step3:- proposal Response.

-> The RW sets are signed by each endorser will send to Client Application.

-> Read-write sets are Asychronous return.

Step4:- order transaction.

-> client can having transaction. it will send to the ordering service. to order the transaction using SOLO (single node, development) and kafka Crash fault tolernace) Algorithms.

-> ordering - Service can receive the other applications also

Step 5:- Deliver Transaction.

-> ordering transaction can send to all the Peers means, Endorser peer and commit peers

Step 6:- validate Transaction

1) Endorser, commiting peer can validate transaction.

E_0, E_1, E_2 must be signed. all Endorser are signed it will be accepted.

=> If two endorser E_1 E_2 are signed. B is not signed. So it will droped here.

=> It also chuke the doubl spending.

=> If transaction perform differente operations in the one vasiable. one Transaction will be accepted another one is droped.

Ex:- x ++ 1st ✓

x -- 10th ✗

Step:- Notify transaction.

24/09/19 MT-3

Ordering Servic

The ordering Services packages transactions into blocks Pato bloks to be delivered to peers. Communicate with the Service is via channels

It is using two Algorithm

1) SOLO

It is using single node to distribute the data to all peer. ~~no~~ in this block chain

a) kafka:

Crash fault tolerant Consensus

It having 3 nodes minimum, and also it having any number of odd nodes.

Channels:-

⇒ There is 10 organization. Suppose we want distribution the some data one organization. It will copy the ledger and It two organization.

→ Ledgers exist in the scope of a channel

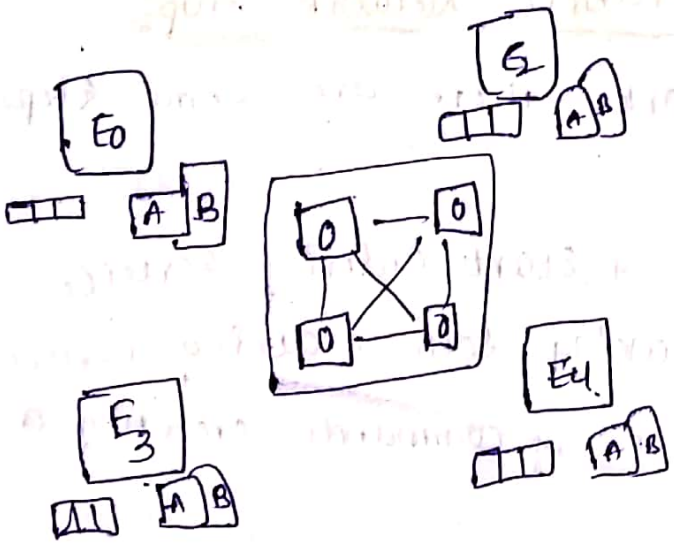
• Channels can be shared across an entire network of peers.

→ Every channel having different ledgers to share the secrete data.

→ private channel for every organization. to communicate the other organization

→ Every private channel Having It's ledger to share secrete data to the organization.

Single Channel Network



=> Every channel Having same smart Contract A+B.

⇒ Here public communicate the each others.

Multi Channel Network:-

→ It having different Smart contracts
→ It having different channels and Ledger
→ Policy is same (or) different policy Ps Demand on the user wish

fabric Peer:-

→ It having channels are same. Peer is used Generate the notifications (or) Events and it also Given CD.
→ Every channel having It own Ledger.
→ Endorsement Policy and chaincode must Same Ledger's are different.

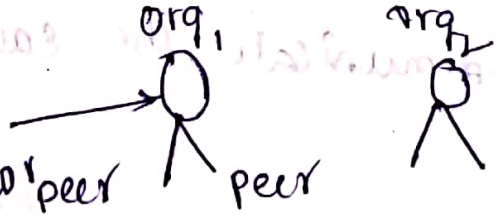
25/09/2019

Hyperledger fabric Network Setup:-

Creating Network there are some steps Those are

Step:- configure & start ordering service.
→ Here taking solo ordering service
→ In this using commands creating a ordering service

Step2:- configure and start peer nodes:-
→ In this take the peer from organizations.



→ Anchor peer act as major part of the peer and It will to go organize another organization to talk.

→ Remaining peer is not get Information from another organization. peer is communicate the Anchor peer and update the data.

$ peer cha

Step 3: Install Chaincode:

It contains the smart contract and It is a softer to Install.

$ perr Chaincode Install.

Step 4: create a channels.

In this we have to create a channels. and peer should be chain this channels.

$ peer create channel.

Step 5: Join Channels.

$ peer Channel Join - - -

→ peer have the permissions to ~~the~~ Join the channels. and they can perform the communications to the organization.

→ Peer can Join specific channel.

Step 6:- Instantiate chaincode in channel.

$ peer chaincode instantiate - - -p 'policy'

→ peers finally Instantiate the chaincode on the channels they want to transact on.

→ here we also mention Endorsement policy.

Endorsement policies:

Endorsement policies is policy to give the accept or reject the Transaction policy, and It will give to the Endorser.

Syntax:-

$ peer chaincode Instantiate

-c mychannel

-n mycc

-p chaincode_Example02

-c '{"Args":["init","a","100","b","200"]}'

-P "AND ('orgImsp.member')"

→ In this should one member has to accept the policy In organization.

Ex:- Request 1 signature from all three principles

-AND ('org1.member', 'org2:Member', org3.mem

In this this Three number must be accept the Policy It will go to next level

-> suppose one Member can not accepte the policy. It can be rejected.

2) Request 1 Signaluse from either one of the two principles

- OR ('org1.Member', 'org2.member')

In this one member can be accpt the policy It will go to next.

one order service called solo Order Service

30/10/2019

Ethereum:

It is open source and it is public Block chain It is a permissionless Block chain Block chain

Disadvantage:

Turing complete

NOV 2013 Vitalik Buterin

2015 → V_1 - olympic
2016 → V_2 → frontier
:
2019 → Constantinople

} versions.

JBA → Instanbul

Bitcoin: Transaction life cycle

Bitcoin Wallet
↓
Creating Transaction -
↓ [This Transaction Broad cast to all the other nodes in the Block chain]
Nonce In this calculate the Nonce value using Proof work
↓
Hash
↓
It Broad cast to the all other node.

Ethereum: Life cycle

It also same as Bitcoin life cycle But It contain the Ethereum wallet Ethereum cryptocurrency is Ether. → It will converted to $

X ——— Ether ——— Y

It will Broad cost to all nodes in the Network, It is also used the proof of work to create hash, After creating hash it will Broadcast to the all other Nodes in the network all check permission to the hash after that will be added in to the Blockchain

→ It will shift to proof of work to proof of stake [1% of ether and 1% of Block → proof of stake].

→ Block Chain. Info Bitcoin → only one public Network

→ Etherscan. io

⇒ But Ethereum having 3 types of Network It will categorized uses of the Network.

i) Main net : actually (or) Live Network of ethereum

ii) Test net : morden → (2) [Dapps] Decentralized Application.

iii) Private net

Test Net for Testing Purpose → Here diplaying the application and Testing.

This is also called as Epstem network. (3)

↓ Rinkbey } Based on the application
↓ Kovan }

Private Net:-

Permission - By using owner permission Network using private Net

⇒ Aden - Mulamark

↓
Install

Each Network Having It's Network id.

⇒ Native crypto currency:-

↓

Which is generated with in the network itself is called Native Crypto Currency.

04/11/2022

gas: Tool to measure the Transaction cost.

$x \longrightarrow y$

Suppose 'x' want to do Transaction we pay some amount to the network. Block

→ Wei - smallest unit of Ether

10^{18} wei = 1 Ether

Simple construct

Solidity

→ It is object - oriented program.

→ High Level program

→ In this programm it perform Election.

Election:

It will take candidates and take votes to elect the candidates.

Ganache: Personal Block Chain.

Helamask: Local Block Chain.

05/01/2019

Block Chain chalenges :-

1) Scalability
2) Interoperability
3) Standordization
4) Engery Intensive
5) Regulation

Scalability :-

memory → to Install 30 GM of Block

Throughput → TO create Block it will take 1 node. 10 min

→ It can Able to Execute the 3-7 Transaction / sec

→ Ethereum it will executed 20 Tx/sec

→ vis - It will executed 20,000 Tx/sec

These are the problems in block Chain

Solution :-

→ TO Increase the Block Size. → 1 MB hardcoded in the Bit coin → Blockchain

→ In Ethereum there is no restrication for Blockchain It will based on the gas Limit.

100gas ⟶ 65 Transaction.

Whevere the Transaction Limit will Increase the gas Limit. and It will be Increases the gas Limit.

→ Ethereum increasing the block size is possible But Blockchain is not possible. It will fixed size

→ By increasing the block size it also problem for storage

→ By increasing Block size. Execution of the Transaction it will take more type.

(ii) Reduction in block Interval:

→ In case of Bitcoin to create a block in Ethereum is 10 Min

→ Creating block with in 5 mins. no of forks will be created.

This is also one problem.

→ Ethereum proposed a solution for to reduce the forks in block that is. GHOST protocol

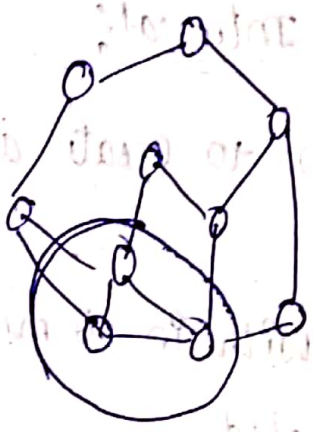
→ GHOST → Greedy ~~this~~ heaviest observed subtree

→ In Ethereum Block can be created 14 sec. So. To handle the forks in Ethereum we used GHOST protocol

iii) Sharding: Piece

Suppose in this we having big task and it will be divided into small sub tasks.

→ In the Blockchain network. It is divided in to sub nodes.



⇒ In the subnet transactions, produce a transaction in the sub net. nodes it will ~~~~ process the transactions in the network

(2) Interoperability:

→ This is communication between the blocks

→ i) Ark:

It will provide the smart bridge in between Block chain. TO communicate the each other

ii) Cosmos : IBC

To share the files in between the Block Chains

3) Standardization:

→ Ethereum provides some standards those are

EIP: EIP-75

EIP-85

→ This standardization provide the some guidlines to create a wallets in the ethereum.

→ Block chain does not have standard.

4) Energy Intensive

→ POS (proof of stake)

→ TO Calculate the hash values. By using resource it may be waste

→ Block chain Technology consume = The small country consume the power.

→ Block chain not having good energy intensive

5) Regulation:

→ It based on goverment take about this.

→ to regulated the Block chain.

→ TO Decentralized the Block chain It may Chance of Regulations.