Experiment. No. 17

Title : write a program to create a Business Network using Hyperledger.

objective : To learn hyperledger, its application and implementation.

Theory :

Hyperledger composer is an extensive, open development toolset & framework to make developing blockchains applications easier.

The primary goal is to accelrate time to value & make it easier to integrate your blockchain application with their existing business system.

You can use composer to rapidly develop use cases & deploy a block solutions in days.

composer allows you to model your business network & integrate existing systems & data with your blockchain application.

You can use Hyperledger composer to model business network containing your existing assests and the transaction related to them.

Key concepts of Hyperledger composer

1. Blockchain state storage - It stores all transaction that happens in your hyperledger composer application.
2. connection profiles : connection profiles to configuration JSON file which help composer to connect Hyperledger Fabric.

3. Assests : Assests are tangible or intangible g services or property & stored in registeries.
4. participants : participants are members of business network.
5. Identities & IO cards - participants can be associat with an Identity.
6. Transactions - Transactions are the mechanism would state queries & can include variable parame for simple customisation.
7. Events - Events are defined in the model life
8. Access control - Hyperledger is enterprise blockcha & access control is core function of any business blockchain.

Let's create First Hyperledger composer Application steps :

1. start Hyperledger composer online version of local click on, Deploy a new business nlw.
2. select empty business network.
3. Fill basic information, select empty business network & click "deploy" button from right panel
4. connect to hardware - assests business network that we have just applied click on connect-now butt
5. click on "+add a file" from left panel & select "model file (.cto)"
6. click on "+ Add a file" from left panel and selec "script file (*.js)"
7. permissions .acl file sample is already available Add code in permissions .acl file.

8. Now its time to test our hardware assests business network. Hyperledger composer gives "test" facility from composer panel it self click on "test" tab from top panel.

9. create Assests. click on Hardware from left panel and click + create new assests from right top corner & add code. click on create new button

10. Lets create participants. click employee and click + create New participants and add code.

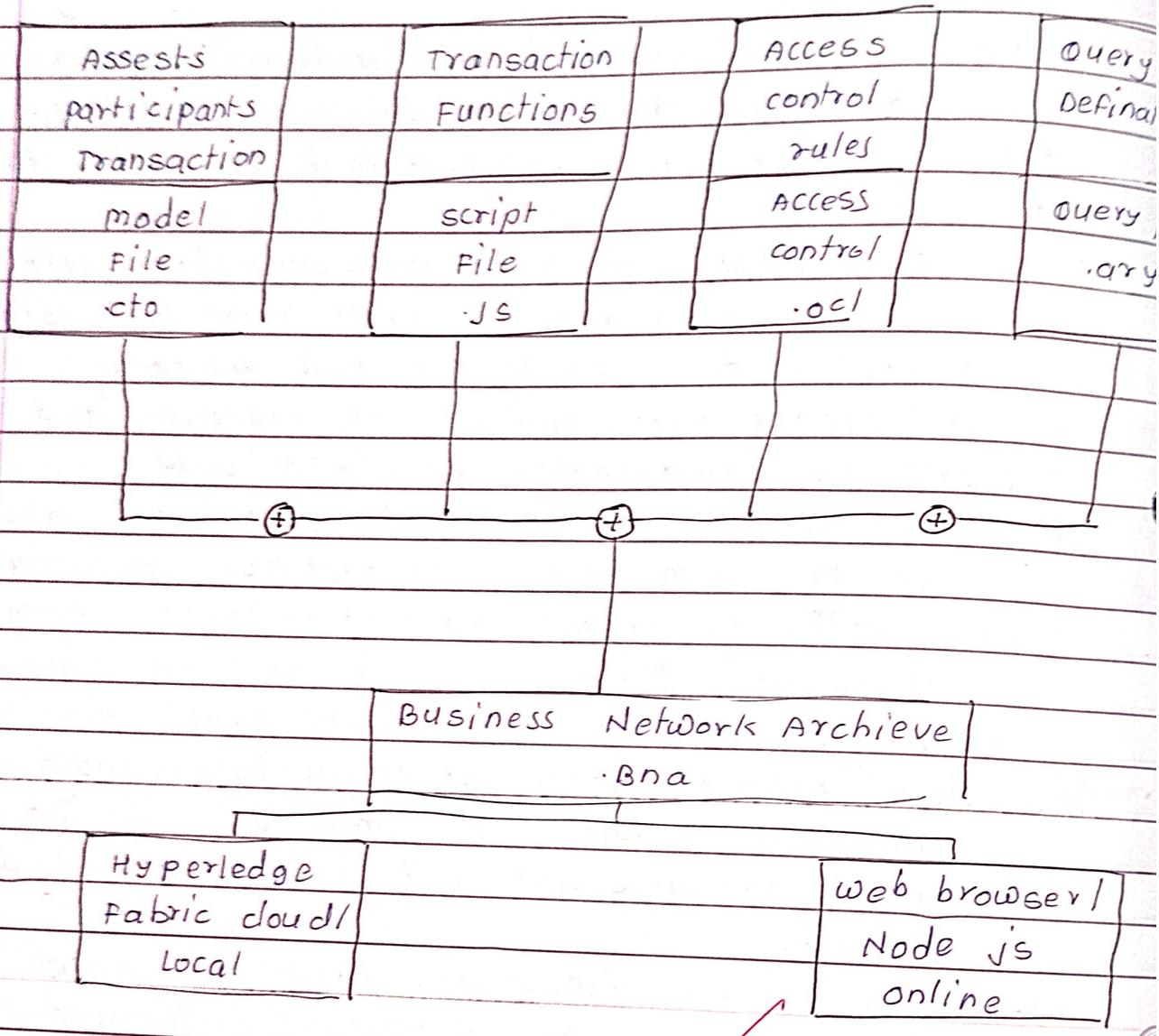
11. It's time to do transaction, we will allocate macbook pro from Kefan (Employee #01) to Nirja (employee #02). click on submit transaction button from left panel In transaction dialog, we can see all transaction functions on top "Transaction Type" dropdown. click submit button after update above JSON in Transaction Diaglog As soon as you hit button. Transaction processed and Transaction Id will be generate.

12. click on all Transactions from left panel to verify all transactions. In following view records will give us more information about transaction

13. Now it's time to deploy "hardware-assests" business networks to Hyperledger Fabric. click on Define tab from top panel & click "export" button from left panel. Export will create hardware-assests .bna file.

Download hardware-assests bna file

.bna is business Network Archieve file which contains model, script, networks access & query file



14. start Docker and run following commands from
~/fabric-tools directory
Install business network to Hyperledger Fabric
if business network is already installed you
can use "update" instead of install.

Conclusion :

In this way we have learnt about hyperledger and it's use case in business world.