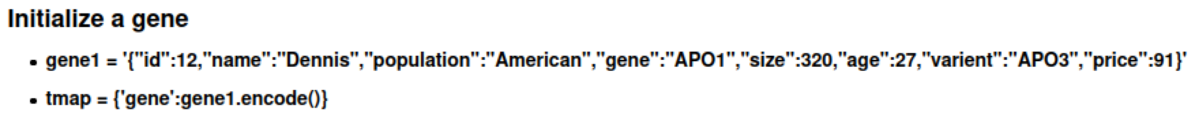
IBC Project Report 3

Ghanendra Singh MT19213
Two weeks work Progress (12-04-21 - 28-04-21)

Defining Transient map

Continuing from the last programming progress report in which it was mentioned that there were some issues in defining the transient map which is used for private data storage, I was able to debug it and define the transient map properly.



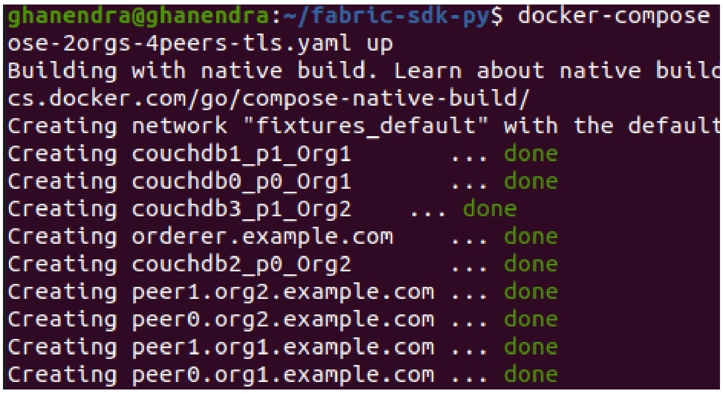
Initialize a gene

- gene1 = '{"id":12,"name":"Dennis","population":"American","gene":"APO1","size":320,"age":27,"varient":"APO3","price":91}'
- tmap = {'gene':gene1.encode()}

Installing CouchDB at each peer

First, installed couchdb containers at each peer to be able to use them as state databases and able to access from the chaincode with the help of shim APIs. Developed understanding of docker compose Get started with Docker Compose to know how multiple containers interact with each other to integrate CouchDB with each peer as its the backend containerization technology in Fabric Network.

Couchdb Installation for each peer



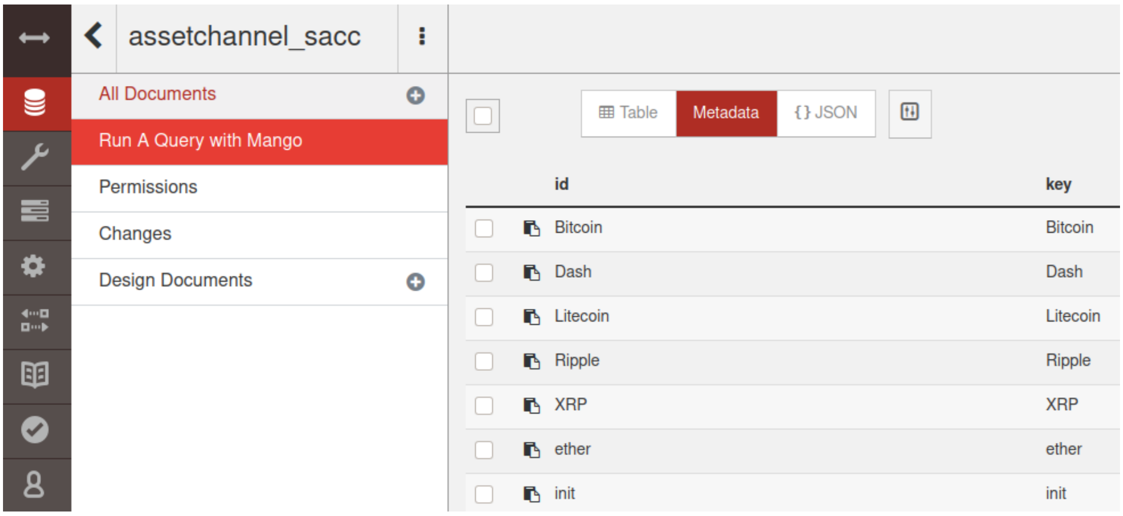
```
ghanendra@ghanendra:~/fabric-sdk-py$ docker-compose
ose-2orgs-4peers-tls.yaml up
Building with native build. Learn about native buil
cs.docker.com/go/compose-native-build/
Creating network "fixtures_default" with the default
Creating couchdb1_p1_Org1        ... done
Creating couchdb0_p0_Org1        ... done
Creating couchdb3_p1_Org2    ... done
Creating orderer.example.com     ... done
Creating couchdb2_p0_Org2        ... done
Creating peer1.org2.example.com ... done
Creating peer0.org2.example.com ... done
Creating peer1.org1.example.com ... done
Creating peer0.org1.example.com ... done
```

Creating Smart Contract

Second, to begin with defining smart contracts or called as chaincode in Hyperledger Fabric framework, initially executed example_cc chaincode Invoke (used to perform operations using transactions) functions - invoke, delete and query. And then tested marble_cc.

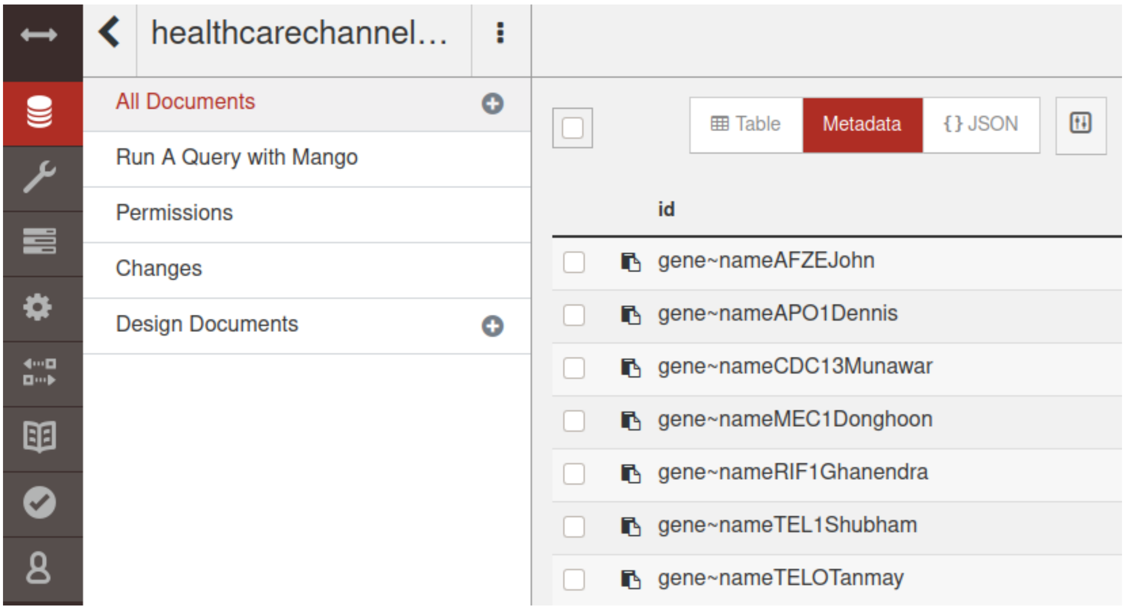
- Started from scratch and wrote a **simple assets** chaincode sacc_go to manage assets. Utilized given understanding from Chaincode for Developers — hyperledger-fabric
- Develop understanding of the asset transfer Ledger Chaincode which demonstrates use of CouchDB queries from chaincode. Then utilized marbles_cc_private chaincode as the base for creating **genomic_cc chaincode**.
- Link for few sample smart contracts - Chaincode

Simple Assets example



id	key
Bitcoin	Bitcoin
Dash	Dash
Litecoin	Litecoin
Ripple	Ripple
XRP	XRP
ether	ether
init	init

Genomic_cc chaincode



id
gene~nameAFZEJohn
gene~nameAPO1Dennis
gene~nameCDC13Munawar
gene~nameMEC1Donghoon
gene~nameRIF1Ghanendra
gene~nameTEL1Shubham
gene~nameTELOTanmay

References

Programming assignment source code

Simple Asset :

- Chaincode file location: Github Simple assets_cc.go
- Fabric Network Python Jupyter file: Github Simple_assets.ipynb

Genomic Chaincode :

- Chaincode file location: Github genomic_cc.go
- Fabric Network Python Jupyter file: Genomic_data_Asset.ipynb

IBC Project work Log: File to keep track of progress. Location : IBC Project work log.pdf