Friday, 29 November 2019

SupplyChain Management for Diamond

Objective

- To create a supply chain system using Hyperledger Fabric to track the Origin and Authenticity of the Diamond.

Chaincode Language Used : GoLang

Asset —> Diamond

Structure of Asset Includes,

{

Name

DateofManufacture

Cost

Status

Cert

OwnerID

OwnerName

}

Participants and their role :

- Seller : who creates the Asset (Status is set to be PENDING at this state)

- Certificate Authority : Verifies the asset and attaches test certificate (CertUrl will be added and Status will be changed from PENDING to LISTED DOWN)

- Buyer : Purchases the Diamond after the verification.

Transactions :

➡ Enrolment

1. Asset will be Created By Seller / Product Owner
2. Status will remain pending as the asset has not yet verified by CA

➡ Certify

1. Adding URL to the asset
2. Changing the status to Listed Down

➡ Buy

1.Ownership has to be transferred (only If the amount gets matched)
2. Public key / OwnerID of the Product has to transferred to Buyer

Creating Asset :

with the help of ./createAsset.sh

Arguments passed :

{“Args":

[“createAsset",	// function name
"DD1145",	// Identity args[0]
"The Blue V1 winston Diamond",	// Diamond name
"04-24-1988",	// Date of Manufacture
"350000",	// Cost
“PENDING”,	// status
“",	// cert url be added once iT gets verified
“OW115",	// Seller / Owner Public Key
"Thangaraj"]	// Owner name

}

Querying the Asset :

with the help of ./queryAsset.sh

Result :

```
Query Result:
{"Cert":"","Cost":"350000","DateofManufacture":"04-24-1988","Name":"The
Blue V1 winston
Diamond","OwnerID":"OW115","OwnerName":"Thangaraj","Status":"PENDING"}
```

Certifying the Asset :

with the help of ./certifyAsset.sh

{“Args":

[“certifyAsset",

"DD1145",

"PRODUCT IS LISTED”, // status has to be changed

“http://localhost:2888/archive/DD/"] // CertUrl has to be added

}

Querying the Asset :

`Result :`

Query Result: {“Cert":"http://localhost:2888/archive/DD/","Cost":"350000","DateofManufacture":"04-24-1988","Name":"The Blue V1 winston Diamond","OwnerID":"OW115","OwnerName":"Thangaraj","Status":"PRODUCT IS LISTED"}

Transfer of Ownership :

1. Once the Buyer's amount meets the seller's amount
2. Ownership of the Diamond Including publickey (OwnerID) of seller will be updated to buyer public key

{"Args":

["transferOfOwnership",

"DD1145",

"350000",

"newowner--Rahul"]

}

Querying the Asset :

Result :

```
Query Result: {"Cert":"http://localhost:2888/archive/
DD/","Cost":"350000","DateofManufacture":"04-24-1988","Name":"The Blue
V1 winston Diamond","OwnerID":"OW115","OwnerName":"newowner--
Rahul","Status":"PRODUCT IS LISTED"}
```

Note :

Please also find the attached screenshots in this folder.

I have used shell scripts which are taught by varun in amity lessons.

I have also created client application as varun guided in the course.

```
For Client side appleation,

    node enroll.js           ( I already have enrolled as an Admin)

    node registerUser.js         ( I already have created One user )

    node certifyAsset.js     ( To certify the asset )

    node invoke.js           ( To Initiate buy Transaction )
```