Composer
Blockchain Development
Week 2
Dr Ian Mitchell

1   Linux

If using another operating system create a virtual machine with Ubuntu. If you are already using Linux then you should not need to do anything. Much of what we do will be based on Ubuntu 18.04 LTS (64 bit).

Create a directory Composer and a subdirectory 2. Save all your work in this directory.

2   CTO - Trader Example - MyFirstBlockchain

The trader example is available at:
`https://hyperledger.github.io/composer/latest/tutorials/developer-tutorial.html`
Then start a new blockchain example.

2.1   Trader Assets

The trader example is a simple description of an asset changing ownership via a transaction.

We are going to deploy this simple network on Composer Playground. Fig 2.1 displays the CTO code we are interested in. In composer-playground this code can be viewed by being in 'Define' mode annd selecting the 'Model File' tab.

Answer the following questions:

1. Identify the namespace?

2. Identify the participant and its associated attributes?

3. Identify the asset and its associated attributes?

4. Identify the asset's relationship to the participant?

5. Identify the transactions and its relationships with participants and assets?

Implement the following:

1. Participant A: Create a participant, make a note of their attributes and identifiers.

2. Participant B: Create a second participant, make a note of their attributes and identifiers.

3. Asset 1: Create one asset, make a note of their attributes and identifiers.

4. Ownership: The asset should belong to participant A to start with.

5. Transaction: Change the ownership of the commodity via a transaction.

6. Transaction: Reset the ownership via another transaction.

7. Look at the transactions made and can you identify when you made the two transactions above.

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```
1  /*
2   * Licensed under the Apache License, Version 2.0 (the "License");
3   * you may not use this file except in compliance with the License.
4   * You may obtain a copy of the License at
5   *
6   * http://www.apache.org/licenses/LICENSE-2.0
7   *
8   * Unless required by applicable law or agreed to in writing, software
9   * distributed under the License is distributed on an "AS IS" BASIS,
10  * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
11  * See the License for the specific language governing permissions and
12  * limitations under the License.
13  */
14  /**
15   * Commodity trading network
16   */
17  namespace org.example.trading
18
19  asset Commodity identified by tradingSymbol {
20    o String tradingSymbol
21    o String description
22    o String mainExchange
23    o Double quantity
24    --> Trader owner
25  }
26
27  participant Trader identified by tradeId {
28    o String tradeId
29    o String firstName
30    o String lastName
31  }
32
33  transaction Trade {
34    --> Commodity commodity
35    --> Trader newOwner
36  }
37
38  event TradeNotification {
39    --> Commodity commodity
40  }
41
42  transaction RemoveHighQuantityCommodities {
43  }
44
45  event RemoveNotification {
46    --> Commodity commodity
47  }
```

Figure 1: Trader Code for CTO, taken from Hyperledger website

3   Car Owner

You have to design a CTO for car ownership, the CTO should contain and have the following:

- Paticipant: individual, name, id, address

- Asset: car, reg, make, model, and a relationship of owner (an individual who owns the car)

- Transaction: should facilitate the change of ownerships between different individuals

4   Bank

Before designing the data model for the bank and line-of-credit model. Look at some of the other examples available on hyperledger composer. Finally, look at the model carefully and design a CTO for the bank and line-of-credit example we discussed in the lecture.

5   Coursework

You need to think of a blockchain application. None of the examples on hyperledger, or in the series of tutorials is permitted. Your idea needs to be original and fairly complex, to reflect the complications we experience from day to day. If you have an idea discuss this with your tutor and start to think of the data model exercise.