Contract: IssuanceStateMachine

Getting started:

1. Go to remix.ethereum.org.

2. Click on the "+" button on the upper left corner of the screen.

3. Name the file name anything appropriate.

4. Copy-paste the code file's contents into the IDE.

Note: Make sure that the compiler version is set to "0.4.24+commit.e67f0147" before trying to run the code, else errors will come.

How to use:

1. Once everything is set up, click on "Start to compile", found on the right side of the IDE.

2. Go to the "Run" tab

3. You'll then see the name of the contract "IssuanceStateMachine" on the right side of the IDE. Click on "Deploy".

4. On the "Deployed Contracts", found on the lower right side of the screen, you'll see the contract. Click on it.

5. You'll start off by inputting "1 Ether" into the Value field on the upper right side of the IDE under the "Run" tab.

6. Click on "buyIssuerRight" to store the value placed in the Value field before interacting with the "issueCertificate" function.

5. On the "issueCertificate" function, click on the "v" button to drop down two forms, "\_cert" and "issued\_to\_address".

6. Input the appropriate name for the certificate in the "\_cert" field.

7. For the address found in the "issued\_to\_address" field, you'll have to go to the "Account" field on the upper right side of the IDE and pick a different account with 100 ether. Then you'll have to copy its address value by clicking on the clipboard button beside it. Once that's done, set the "Account" back to the first default one.

8. Paste the copied address into the "issued\_to\_address" field.

10. Finally, click on the "Transact" button.

11. The code should mine the transaction and succeed in its execution.

12. You may also get the issuer hash by clicking on the "getIssuerHash" function button.

Context: The behavioral pattern State Machine sets the program into "stages" where they'll have to go through a prerequisite before they proceed with the next set of functions. In this case, the issuance of certificates is set to two (Three, if considering the "getIssuerHash" function) stages. First, the user will have to buy the right to issue a certificate before actually doing it. If you didn't pay 1 Eth to it, the process won't proceed further. If you're able to pay for it, you may now move on to certificate issuance.