

Running Ethereum Virtual Machine (EVM) Smart Contracts on Hyperledger Fabric

Presented by [The Blockchain Academy](#) and [On360 Learning Platform](#)



THE
BLOCKCHAIN
ACADEMY



Presenter:

[Jim Sullivan](#), CTO, The Blockchain Academy

[Certified Scrum Master](#)

[Certified SAFe 5 Program Consultant](#)

[Certified Jira Administrator](#)

[Hyperledger Professional](#)

[Hyperledger Blockchain Certified](#)

[R3 Corda Certified Professional](#)

[NEAR Certified Professional](#)

[Healthcare Blockchain Certified](#)

[Kubernetes DevOps Professional](#)

[AWS Partner](#)

The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

IMPORTANT: Virtual image Ubuntu uid: jimmys. Virtual image password: Red\$tar500.

UID: jimmys

passwd: Red\$tar500

```
###git clone https://github.com/hyperledger-archives/fabric-chaincode-evm.git
```

```
cd /home/jimmys/go/src/github.com/hyperledger
```

```
export GOPATH=$HOME/go
```

```
cd /home/jimmys/go/src/github.com/hyperledger/fabric-samples/first-network
```

```
yes | ./byfn.sh down
```

```
yes | ./byfn.sh generate
```

```
yes | ./byfn.sh up
```

```
cd /home/jimmys/go/src/github.com/hyperledger/fabric-chaincode-evm
```

```
docker exec -it cli bash
```

```
# Environment variables for PEERO
```

```
export
```

```
CORE_PEER MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/org1.example.com/users/Admin@org1.example.com/msp
```

```
export CORE_PEER_ADDRESS=peer0.org1.example.com:7051
```

This document is licensed to the user by the Blockchain Academy, and it must be used according to the agreement.

The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

```
peer chaincode query -n evmcc -C mychannel -c  
'{"Args":["dcd751365c0290705bb60e3d84d4d5429c3d237c","6d4ce63c"]}' --hex
```

```
peer chaincode query -n evmcc -C mychannel -c '{"Args":["account"]}'
```

---- close terminal and open a new terminal -----

```
cd /home/jimmys
```

```
sudo chmod -R 777 ./go #enter password: Red$tar500
```

```
echo $GOPATH
```

```
export GOPATH=$HOME/go
```

```
echo $GOPATH
```

```
cd /home/jimmys/go/src/github.com/hyperledger/fabric-chaincode-evm
```

```
# Environment Variables for Fab3:
```

```
export
```

```
FAB3_CONFIG=${GOPATH}/src/github.com/hyperledger/fabric-chaincode-evm/examples/first-network-s  
dk-config.yaml # Path to a compatible Fabric SDK Go config file
```

```
export FAB3_USER=User1 # User identity being used for the proxy (Matches the users names in the  
crypto-config directory specified in the config)
```

```
export FAB3_ORG=Org1 # Organization of the specified user
```

```
export FAB3_CHANNEL=mychannel # Channel to be used for the transactions
```

```
export FAB3_CCID=evmcc # ID of the EVM Chaincode deployed in your fabric network. If not provided  
default is evmcc.
```

```
export FAB3_PORT=5000 # Port the proxy will listen on. If not provided default is 5000.
```

This document is licensed to the user by the Blockchain Academy, and it must be used according to the agreement.

The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

```
#make fab3
```

```
bin/fab3
```

```
-- minimize terminal and open a new terminal -----
```

```
cd /home/jimmys/go/src/github.com/hyperledger/fabric-chaincode-evm
```

```
#### npm install web3@0.20.2
```

```
node
```

```
> Web3 = require('web3')
```

```
> web3 = new Web3(new Web3.providers.HttpProvider('http://localhost:5000'))
```

```
> web3.eth.accounts
```

```
> web3.eth.defaultAccount = <account>
```

```
-----  
  
simpleStorageABI = [  
  {  
    "inputs": [],  
    "payable": false,  
    "stateMutability": "nonpayable",  
    "type": "constructor"
```

This document is licensed to the user by the Blockchain Academy, and it must be used according to the agreement.

The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

```
    },  
    {  
      "anonymous": false,  
      "inputs": [  
        {  
          "indexed": false,  
          "internalType": "uint256",  
          "name": "id",  
          "type": "uint256"  
        },  
        {  
          "indexed": false,  
          "internalType": "string",  
          "name": "content",  
          "type": "string"  
        },  
        {  
          "indexed": false,  
          "internalType": "bool",  
          "name": "present",  
          "type": "bool"  
        }  
      ],  
      "name": "StudentCreated",  
      "type": "event"  
    },  
    {  
      "anonymous": false,  
      "inputs": [  

```

This document is licensed to the user by the Blockchain Academy, and it must be used according to the agreement.

The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

```
        {
            "indexed": false,
            "internalType": "uint256",
            "name": "id",
            "type": "uint256"
        },
        {
            "indexed": false,
            "internalType": "bool",
            "name": "present",
            "type": "bool"
        }
    ],
    "name": "StudentPresent",
    "type": "event"
},
{
    "constant": false,
    "inputs": [
        {
            "internalType": "string",
            "name": "_content",
            "type": "string"
        }
    ],
    "name": "createStudent",
    "outputs": [],
    "payable": false,
    "stateMutability": "nonpayable",
```

This document is licensed to the user by the Blockchain Academy, and it must be used according to the agreement.

The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

```
        "type": "function"
    },
    {
        "constant": true,
        "inputs": [],
        "name": "studentCount",
        "outputs": [
            {
                "internalType": "uint256",
                "name": "",
                "type": "uint256"
            }
        ],
        "payable": false,
        "stateMutability": "view",
        "type": "function"
    },
    {
        "constant": true,
        "inputs": [
            {
                "internalType": "uint256",
                "name": "",
                "type": "uint256"
            }
        ],
        "name": "students",
        "outputs": [
            {
```

This document is licensed to the user by the Blockchain Academy, and it must be used according to the agreement.

The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

```
        "internalType": "uint256",
        "name": "id",
        "type": "uint256"
    },
    {
        "internalType": "string",
        "name": "content",
        "type": "string"
    },
    {
        "internalType": "bool",
        "name": "present",
        "type": "bool"
    }
],
"payable": false,
"stateMutability": "view",
"type": "function"
},
{
    "constant": false,
    "inputs": [
        {
            "internalType": "uint256",
            "name": "_id",
            "type": "uint256"
        }
    ],
    "name": "togglePresent",
```


The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

```
203166002900480156102c35780601f10610298576101008083540402835291602001916102c3565b820
191906000526020600020905b8154815290600101906020018083116102a657829003601f168201915b5
0505050908060020160009054906101000a900460ff16905083565b6102e86105d8565b60016000838
152602001908152602001600020604051806060016040529081600082015481526020016001820180546
00181600116156101000203166002900480601f016020809104026020016040519081016040528092919
0818152602001828054600181600116156101000203166002900480156103a95780601f1061037e57610
1008083540402835291602001916103a9565b820191906000526020600020905b815481529060010190
60200180831161038c57829003601f168201915b505050508152602001600282016000905490610100
0a900460ff16151515158152505090508060400151158160400190151590811515815250508060016000
84815260200190815260200160002060008201518160000156020820151816001019080519060200190
61041e9291906105fb565b5060408201518160020160006101000a81548160ff021916908315150217905
5509050507fa2293dd856b07226640eb5ac6e8222d0878dbdba7a22450a8e05eed6c12e7747828260400
15160405180838152602001821515151581526020019250505060405180910390a15050565b600054815
65b60008081548092919060010191905055506040518060600160405280600054815260200182815260
20016000151581525060016000805481526020019081526020016000206000820151816000015602082
01518160010190805190602001906104fe9291906105fb565b5060408201518160020160006101000a81
548160ff021916908315150217905509050507f800a9140a26b23eef10216192d49bea326b229fba88b0
e2a664c16e98f2ec24600054826000604051808481526020018060200183151515158152602001828103
825284818151815260200191508051906020019080838360005b8381101561059957808201518184015
260208101905061057e565b505050905090810190601f1680156105c65780820380516001836020036
101000a031916815260200191505b50945050505060405180910390a150565b6040518060600160405
28060008152602001606081526020016000151581525090565b82805460018160011615610100020316
6002900490600052602060002090601f016020900481019282601f1061063c57805160ff1916838001178
55561066a565b8280016001018555821561066a579182015b82811115610669578251825591602001919
06001019061064e565b5b509050610677919061067b565b5090565b61069d91905b8082111561069957
6000816000905550600101610681565b5090565b9056fea265627a7a723158205ec13d964ad4ca4c40c65
17185ddd0bdd8719357c31c55bd33ca2b9e56de9c3964736f6c63430005110032"
```

```
> SimpleStorage = web3.eth.contract(simpleStorageABI)
```

```
> deployedContract = SimpleStorage.new([], {data: simpleStorageBytecode})
```

```
> myContract =
```

```
SimpleStorage.at(web3.eth.getTransactionReceipt(deployedContract.transactionHash).contractAddress)
```

```
'0x09e0b4205e78a8b378c58fd2794178d140ae15fc'
```

```
> myContract = SimpleStorage.at('0x09e0b4205e78a8b378c58fd2794178d140ae15fc')
```

The Blockchain Academy presents: Running the EVM and Solidity Smart Contracts on Hyperledger Fabric.

```
> myContract.students(1);
```

```
> myContract.students(4);
```

```
> myContract.students(4).toString()
```

```
> myContract.createStudent('Ryan Williams')
```

```
> myContract.students(5);
```

```
> myContract.students(5).toString()
```