Skills Bridge Setup

Scientia Pontiem System: Skills Bridge is an application that offers career portal service similar to LinkedIn, Kalibrr, Jobstreet, etc. The difference between them are: the data of the users will be secured by using a Blockchain network through asymmetrical cryptography. There's also a verification feature in which the credential or diploma that the jobseeker filled up can be determine if it is fake or not. This project is proposed for the Philippine Business for Education (PBED) in the IBM Cognitive Build 2019.

To do the Blockchain setup for Skills Bridge, you need to install the necessary software and files.

Install Software

1. Download and install Git Bash.

   https://git-scm.com/downloads

2. Download and install NodeJS. https://nodejs.org/en/download/

   Note: Use the LTS version

   Installing Node.js will also install the NodeJS Package Manager (NPM).

3. Open a Git Bash terminal.

   In the succeeding steps, when you see the prompt below, it means that a command needs to be executed in the Git Bash terminal.

   ```
   >
   ```

4. Change the version of NPM.

   ```
   > npm install npm@5.6.0 -g
   ```

5. Download and install VSCode. https://code.visualstudio.com/download

6. Download and install Python.

   https://www.python.org/downloads/windows/

   Note: Use version 2.x.x

7. Download and install Docker Desktop.

   https://www.docker.com/products/docker-desktop

   Note: You may need to create a Docker ID to download the software.

8. Test the Docker Desktop installation

```
> docker version
> docker run hello-world
```

IMPORTANT: When you continue with the succeeding steps and encounter at least one of the following errors:

```
Mount C. This shared resource does not exist.
```

or

```
Drive sharing failed for an unknown reason
```

or

```
Drive has not been shared
```

refer to the troubleshooting section at the end of this document to fix the error.

9. Download and install Postman. https://www.getpostman.com/downloads/

10. Install the Hyperledger Fabric platform-specific binaries.

```
> mkdir -p /c/blockchain-training
> cd /c/blockchain-training
> curl -sSL http://bit.ly/2ysbOFE | bash -s -- 1.4.1 1.4.1 0.4.15
```

Setup the Git Environment

1. Run the following commands.

```
> git config --global core.autocrlf false
> git config --global core.longpaths true
```

2. Check the setting of these parameters with the following commands.

```
> git config --get core.autocrlf
> git config --get core.longpaths
```

Install Prerequisite NodeJS Packages

1. Install Visual Studio C++ Build Tools.

```
> npm install --global windows-build-tools
```

2. Install GRPC module.

```
> npm install --global grpc
```

Test the Setup

1. Start the blockchain network.

```
> cd /c/blockchain-training/blockchain-tutorial/chaincode
> ./quick-setup.sh blue-coin-no-acl blue-coin 1.0
```

This may take several minutes.

You should see the message:

```
Quick setup for chaincode blue-coin is complete.
```

2. Invoke a command in the chaincode in order to register jobseeker.

```
> docker exec cli0.org1 peer chaincode invoke \
  -o orderer.example.com:7050 \

  -C mychannel -n blue-coin-upd \
 -c '{"function":"registerJobseeker","Args":["user0001", "Rommel", "Ormita"]}'
```

You should see a message that contains the following:

```
2020-01-21 02:02:42.215 UTC [chaincodeCmd] chaincodeInvokeOrQuery -> INFO 001
Chaincode invoke successful. result: status:200
payload:"{\"status\":200,\"message\":\"Successfully registered
Jobseeker\",\"payload\":{\"docType\":\"jobSeeker\",\"userId\":\"userid001\",\
"firstName\":\"Rommel\",\"lastName\":\"Ormita\",\"publicKey\":\"-----BEGIN
PUBLIC KEY-----
\\nMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAoCama7/UnDlXaVnQ17ot\\nSznprz0
XfcRdE+ItCH3/5bHnGIzsonl87xc0TNXWCDM7CuMJXWIG469hpV2zRTOw\\nYZXuZpbYMm9fy3bm2
HL1p28e4i8JYpnd6rcXFYhnyQXDQCPAroibT8clhRbMPGAF\\nyIcbG+3pOuxtoEhQFjqCEHtS7Ar
yoLfq8ClNMJvAa0+gSb/a/kSL/Y6H0fSAK5qN\\nV3z93t92R05jKpQfedm16tUOQtJbvX8FFewiw
VrDufkH5EcFPnVOzpQVJ6WCtJ0k\\nL+/8vq1HFHXfkgZJz2cMrMzMPdho+EiRuIET4aBKdvcoku/
WHj8PBHLhwfIqoV/h\\nzQIDAQAB\\n-----END PUBLIC KEY-----
\",\"privateKey\":\"feALz47uqdwWwUwUqX4ZBnlVucfDNfZgve+wwisRBMB5p+PF3Q22wcQUp
rayAX0b2COTKYwEuagMwRhM6O0h0IpViYxWFM/Rwa7vVs59oAKw6CeYS+rG7DRcQtJFpf2+teUD3P
```

```
70eVRN4/Hm7BrGjO9vsxbdWjgJZ7PDmmyI+vJVp+pcp8OtOPrNdo9bcJpu2ys4TNHLh13dDTn1SDX
wet9zJO2Xo2LVITWB7vXFZMaHnjDGmQawfJvH4N6cVmiRMhN4rbmSL3K1EngBQXhY4wjvefCt6Tbm
3nOpL2WFczvt7Z5VJB3w2KfA/bhxrBjETNDXDDgSrWa53drlOksDAZGnLO6gPdrO8P7uEUpOt5K9w
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6yjzouIQ2+1hlWmxunQ87BAme5r32jOhjStxmXuFR4Z4xJBILz0hCPT99MOpgeh/yfJSkjVVt4g2q
A4B+FMK2SqBCmOqOkbxsLC0hS8plDmuDBBizAfqYEotj2vptKy08fe1+X57Kuy1DdyxLqqUH9YQDc
3v4nufya2YoqF1bO99JbDBCud7XOC9ErSiXACZpsa4UyTdQW/MOGyCN0MdQNUXkJ2I0I+DHxkxVWW
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pLWghaONVeR5gHuwa8pD34BNq5PXRf2mKJnjj4i+KpSHNb8YT7IxsIP6w3sjIAhNhqDeyo9qEsnpw
k4jHVZiDFj+iFK5h1sZ6k6OpURpzVeFW+xV7rVSnbFtH6gxmqs7DxAwJ9J1LZ0hPj+QlWRVTKRmBt
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ARL/zoj8nY9V1UzUCkB5s7UCYPbrNopL6vrTUhokAwOCZdGO6bkQ9WBrmj8LWmx+Vmi6rg0ScBwaQ
ffOoCb3Q2C/Jwf7qL9YCtir4s1AyYqO//Dl0YEtfHeeboFf2dFB4LYiwGdhBx4qCt4wvIo4Xe+pNb
99AIFZ5YDFUHNJ6tljeUGi0EXeM/trCanx/M6fbC03P2qnLXPtkNLhKBPmO2YpXvLXDHG+ux0WSx6
aN/NwLFoeEkxcyv7aUg0sQBAGey8JYvqta1Jk7LupBdNdDvtrp8n8wSb5IfNgE2WhNCsWXCwJP2qg
exe5LjROZ15KcJCo7pkA9XuiQBVUeeXJBW6H+DKyfI9OgBeVmNihLLMFLwa2oVm5boOoSiWnI+9a1
gxnK8WPMEd6dDokzlPKdBqPUr6Pcfqj+qRrZ1sZQLPBdW4CCl1zGUsBw/u0AUUFscmFzSHl3waWP9
SBajNWeO/AzGuIr43Dq6CB5hwOrGk/JS+fkoUkzFxNG/gNWUQq9Qo5/MGe0Rb3xhWANuuCDjJKnbx
C/8ECF/w0/J1juIJeFefzdYpBNzMeEGDz5AnorF6wEGRdABZkD35mSBJLEatEedbh1O+OLyvoQ64r
OX20Hcc4sQwF25ihK0V9ND/+cZNZqgvOxDyIuNICfk1CxvTZrNLu2dLg1OTSvl75v1Sm5I5cSe6A/
ZrNcmYzsZM9JPbIVzrwuh7fo9GnlNhdjb+DYEyun7RQxJ/oMS0CYVwlSKu6+tHPgf/IyS8V0keN1c
gm5OAfFJN/AXEpehw5q3oxAor0t8S+byS7+fEifBNmQkwU+GcakOZ6F7FyNgILWiVmCsWxTnHrk3t
3gbmCckgoPqwqkpJrjUx957VwRkb8sM0Hu+rSlMc2aSPKSBL/IekpkvrmIhYOwd3pI+hJ59s4zfvH
S3m56HEGbEprfsD17ZwZx5DX4dxel56pZVGB14JGkGa5f8vB2ChT4Zdg98syKcRHRQbzB+rjOP3XB
qH3UYj+5ek0Iu9cXr8hkNDeJWCWQwsfj6J8oyFz9KexGNJ48ZR54nT9G6qx0iXDU2A9Szsl+JEtPC
w+iyhsijvk+Y2ygzuePPGEdrDRV\"}}"
```

3. Install the necessary packages in the sample NodeJS program.

```
> cd /c/blockchain-training/blockchain-tutorial/client/blue-coin
> npm install
```

This may take several minutes.

4. Invoke a command in the chaincode in order to register employer.

```
> docker exec cli0.org1 peer chaincode invoke \
  -o orderer.example.com:7050 \

  -C mychannel -n blue-coin-upd \
 -c '{"function":"registerEmployer", "Args":["Employer0001", "APC"]}'
```

You should see the message:

```
2020-01-21 02:05:31.564 UTC [chaincodeCmd] chaincodeInvokeOrQuery -> INFO
001 Chaincode invoke successful. result: status:200
payload:"{\"status\":200,\"message\":\"Successfully registered
Company\",\"payload\":{\"docType\":\"employer\",\"employerId\":\"employer
0001\",\"firstname\":\"APC\",\"publicKey\":\"-----BEGIN PUBLIC KEY-----
\\nMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAoCama7/UnDlXaVnQ17ot\\nSzn
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m9fy3bm2HL1p28e4i8JYpnd6rcXFYhnyQXDQCPAroibT8clhRbMPGAF\\nyIcbG+3pOuxtoEh
QFjqCEHtS7AryoLfq8ClNMJvAa0+gSb/a/kSL/Y6H0fSAK5qN\\nV3z93t92R05jKpQfedm16
tUOQtJbvX8FFewiwVrDufkH5EcFPnVOzpQVJ6WCtJ0k\\nL+/8vq1HFHXfkgZJz2cMrMzMPdh
o+EiRuIET4aBKdvcoku/WHj8PBHLhwfIqoV/h\\nzQIDAQAB\\n-----END PUBLIC KEY---
--
\",\"privateKey\":\"feALz47uqdwWwUwUqX4ZBnlVucfDNfZgve+wwisRBMB5p+PF3Q22w
cQUprayAX0b2COTKYwEuagMwRhM6O0h0IpViYxWFM/Rwa7vVs59oAKw6CeYS+rG7DRcQtJFpf
2+teUD3P70eVRN4/Hm7BrGjO9vsxbdWjgJZ7PDmmyI+vJVp+pcp8OtOPrNdo9bcJpu2ys4TNH
Lh13dDTn1SDXwet9zJO2Xo2LVITWB7vXFZMaHnjDGmQawfJvH4N6cVmiRMhN4rbmSL3K1EngB
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szpFXsNjxJNNpr/1xaAZUxKm6yjzouIQ2+1hlWmxunQ87BAme5r32jOhjStxmXuFR4Z4xJBIL
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vptKy08fe1+X57Kuy1DdyxLqqUH9YQDc3v4nufya2YoqF1bO99JbDBCud7XOC9ErSiXACZpsa
4UyTdQW/MOGyCN0MdQNUXkJ2I0I+DHxkxVWWcff/q15HpkYJzQ03lcv77Vu2UFwPQyqCTArue
LBnpxu3w/6eF55ySGOpzo7Df71iySykY86h2AtJEpLWghaONVeR5gHuwa8pD34BNq5PXRf2mK
Jnjj4i+KpSHNb8YT7IxsIP6w3sjIAhNhqDeyo9qEsnpwk4jHVZiDFj+iFK5h1sZ6k6OpURpzV
eFW+xV7rVSnbFtH6gxmqs7DxAwJ9J1LZ0hPj+QlWRVTKRmBt6pzy8USTkwRaUni5eJABGQJgc
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N/NwLFoeEkxcyv7aUg0sQBAGey8JYvqta1Jk7LupBdNdDvtrp8n8wSb5IfNgE2WhNCsWXCwJP
2qgexe5LjROZ15KcJCo7pkA9XuiQBVUeeXJBW6H+DKyfI9OgBeVmNihLLMFLwa2oVm5boOoSi
WnI+9a1gxnK8WPMEd6dDokzlPKdBqPUr6Pcfqj+qRrZ1sZQLPBdW4CCl1zGUsBw/u0AUUFscm
FzSHl3waWP9SBajNWeO/AzGuIr43Dq6CB5hwOrGk/JS+fkoUkzFxNG/gNWUQq9Qo5/MGe0Rb3
xhWANuuCDjJKnbxC/8ECF/w0/J1juIJeFefzdYpBNzMeEGDz5AnorF6wEGRdABZkD35mSBJLE
atEedbh1O+OLyvoQ64rOX20Hcc4sQwF25ihK0V9ND/+cZNZqgvOxDyIuNICfk1CxvTZrNLu2d
Lg1OTSvl75v1Sm5I5cSe6A/ZrNcmYzsZM9JPbIVzrwuh7fo9GnlNhdjb+DYEyun7RQxJ/oMS0
CYVwlSKu6+tHPgf/IyS8V0keN1cgm5OAfFJN/AXEpehw5q3oxAor0t8S+byS7+fEifBNmQkwU
+GcakOZ6F7FyNgILWiVmCsWxTnHrk3t3gbmCckgoPqwqkpJrjUx957VwRkb8sM0Hu+rSlMc2a
SPKSBL/IekpkvrmIhYOwd3pI+hJ59s4zfvHS3m56HEGbEprfsD17ZwZx5DX4dxel56pZVGB14
JGkGa5f8vB2ChT4Zdg98syKcRHRQbzB+rjOP3XBqH3UYj+5ek0Iu9cXr8hkNDeJWCWQwsfj6J
8oyFz9KexGNJ48ZR54nT9G6qx0iXDU2A9Szsl+JEtPCw+iyhsijvk+Y2ygzuePPGEdrDRV\"}
}"
```

5. Invoke a command in the chaincode to register Training Center.

```
> docker exec cli0.org1 peer chaincode invoke \
  -o orderer.example.com:7050 \

  -C mychannel -n blue-coin-upd \
  -c '{"function":"registerTC","Args":["tc0001", "TESDA"]}'
```

You should see the message:

```
2020-01-21 02:08:26.460 UTC [chaincodeCmd] chaincodeInvokeOrQuery -> INFO 001
Chaincode invoke successful. result: status:200
payload:"{\"status\":200,\"message\":\"Successfully registered Training
Center\",\"payload\":{\"docType\":\"trainingCenter\",\"tcId\":\"tc0002\",\"tc
Name\":\"TESDA\"}}"
```

6. Invoke a command in the chaincode in order to add credential.

```
> docker exec cli0.org1 peer chaincode invoke \
  -o orderer.example.com:7050 \
  -C mychannel -n blue-coin-upd \
  -c '{"function":"addCredential","Args":["tc0001", "userid0001", "Java Training",
    "21/21/2020"]}'
```

You should see the message

```
2020-01-21 02:11:25.457 UTC [chaincodeCmd] chaincodeInvokeOrQuery -> INFO 001
Chaincode invoke successful. result: status:200
payload:"{\"status\":200,\"message\":\"Successfully added
credential\",\"payload\":{\"docType\":\"credential\",\"userId\":\"user0001\",
\"encCred\":\"~\\u00197u\357\277\275=\357\277\275\357\277\275\357\277\2753\35
7\277\275\357\277\275\315\257b
\357\277\275\nM\357\277\275e\357\277\275\357\277\275\\t\313\277\357\277\275\
357\277\275\357\277\275\357\277\275\357\277\275\357\277\275\357\277\275\\t\35
7\277\275\357\277\275\357\277\275\357\277\275`\357\277\275\357\277\275\357\27
7\275\357\277\275/\357\277\275\357\277\2759\357\277\275\357\277\275\313\271
\357\277\275\333\236\357\277\275\357\277\275Iq^\357\277\275\357\277\275\\u000
1\\n\357\277\275\357\277\275a\357\277\275iDS'\357\277\2757\357\277\275\357\27
7\275\357\277\275?\357\277\275v\357\277\275U\357\277\275\\u0015\357\277\275E\
357\277\275\357\277\275\357\277\275fl\357\277\275An\357\277\275\357\277\275\3
57\277\275Hn\357\277\2757\357\277\275\\u0017&\357\277\275\\u0003\357\277\275\
357\277\275\357\277\275JMK\\\"\304\225\357\277\275@\357\277\275\357\277\275\\
u001a\357\277\275\357\277\275\\rU\357\277\275\\t\357\277\275\311\275\\u0005\3
57\277\275/\\br\357\277\275i\357\277\275\357\277\275r\357\277\275\357\277\275
6\\f\357\277\275W\357\277\275\357\277\275\332\224+\357\277\275,\357\277\275T/
I\357\277\275\357\277\275EA&\\u0000\357\277\275\357\277\275\357\277\275\357\2
77\275*\\u0003\357\277\275\357\277\275\357\277\275c\357\277\275\\u0000\357\27
7\275#j\\f3\\u0018\\u00030\357\277\275\357\277\275{\\u0016\357\277\275U]G\\t\
357\277\275\357\277\275A/\\u000b\\u0017\303\237\357\277\275Sn\357\277\275\331
\225\357\277\275\\u001f\357\277\275*m\357\277\275\304\213\357\277\275i\357\27
7\275\\u0003\357\277\275f(\321\271\357\277\275\357\277\275\\\\\346\207\220.O\
357\277\275k\\u0006\357\277\275}\357\277\275\357\277\275\357\277\275\357\277\
275;\\u0000\\u000b\\b\357\277\275\357\277\275Xr_;\\u0012WV\357\277\2752\357\2
77\275\",\"hashCred\":\"D8bQMvd3CUncnUXdc5BoPnOczrA/+UPwH7XhrLhwjUU=\",\"tcId
\":\"tc0001\"}}"
```

Troubleshooting Share Error

Do this step **ONLY** if you encounter this error:

```
Mount C. This shared resource does not exist.
```

or

```
Drive sharing failed for an unknown reason
```

or

```
Drive has not been shared
```

1. Click the Start Window icon and select Settings (i.e., Gear icon).

2. In the `Find a Setting` textbox, type `accounts`.

3. Choose `Add, edit, or remove other users`.

4. Take note of the `Administrator` account name that starts with `AzureAD\`.

    For example if you see `AzureAD\JUANDELACRUZ`, please remember the account name `JUANDELACRUZ`.

    You will create an account later with exactly the same name.

5. Choose `Add someone else to this PC`.

6. Click `I don't have this person's sign-in information`.

7. Click `Add a user without a Microsoft account`.

8. In the `User name` textbox, type the account name you took note earlier.

    Note: Do not type `AzureAD\`

9. In the password textbox, you can use a different password from the one you use when logging in to your machine.

10. Fill-up the security questions/answers textboxes.

11. Click `Next`.

12. The newly created account should appear under `Other users`.

13. Click the newly created account.

14. Click `Change account type`.

15. In the `Account type` drop-down list, select `Administrator`.

16. Click `OK`.

17. In the system tray (near the system time), look for the icon of Docker Desktop.

    Docker Desktop icon is a combination of a ship and a whale.

    If you cannot find this icon, possibly it is in the `Hidden Icons` of the system tray. Click the up arrow `^` near the system time to show the `Hidden Icons` tray.

18. Click the icon of Docker Desktop.

    A pop-u menu will appear.

19. Click `Settings`.

20. Click `Shared Drives`.

21. Click the checkbox for `C`.
22. Click `Apply`.

23. When prompted for a username and password, type the credentials of your newly created account.

To do the Front End setup for Skills Bridge, you need to install the necessary software and files.