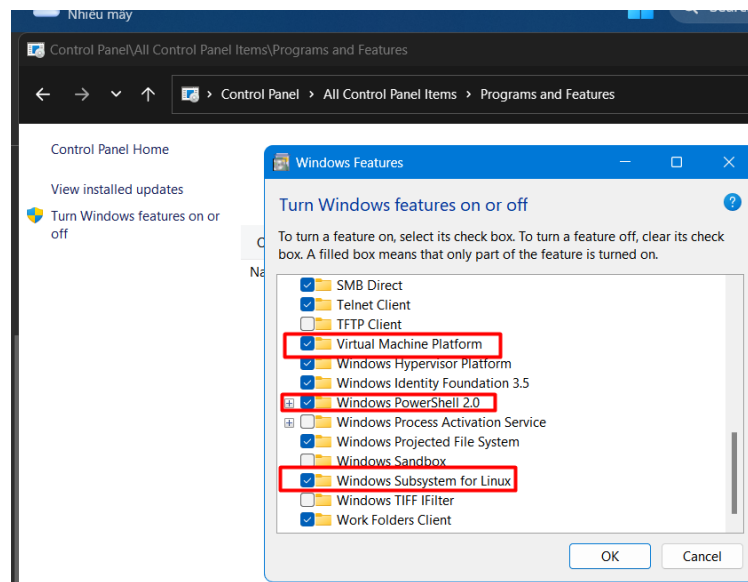


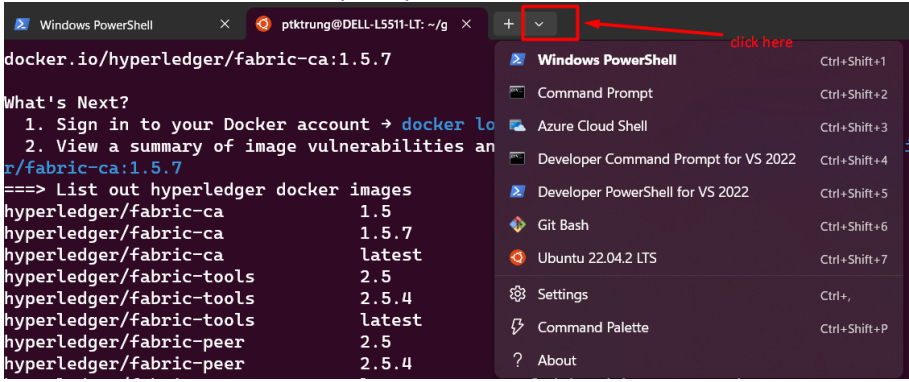
Prerequisites Installation for HyperLedger Fabric.

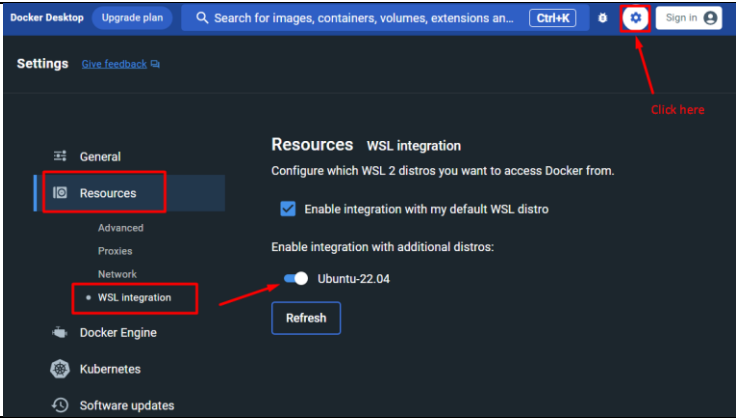
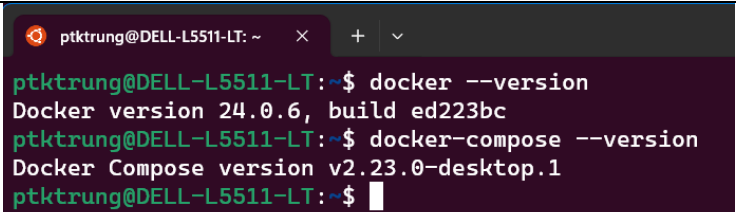
Following steps (Video FYI: <https://www.youtube.com/watch?v=jYY-rmOJYoo>)

1.	Open Poweshell in Admin mode
2.	Enable Windows SubSystem for Linux Dism.exe /online/enable-feature /featurename:Microsoft-Windows-Subsystem-Linux /all /norestart
3.	Enable Virtual Machine Platform Dism.exe /online /enable-feature /featurename:VirtualMachinePlatform /all /norestart

1,2,3 can be enable via Control Panel \ Programs and Features (click on Turn Windows features on or off)



4.	Set WSL-2 as default option : <code>wsl --set-default-version 2</code>
5.	Install Ubuntu App from Windows Store: Open the Microsoft Store and install Ubuntu 22.04LTS here <i>(Remember user and password when installing)</i>
6.	Install Windows terminal via Microsoft Store: it enables multiple tabs, quickly between the Linux command line and the windows command prompt. 
7.	Updating and installing basic package for Ubuntu: <code>sudo apt install && sudo apt upgrade</code>

8	<p>Enable Docker for Ubuntu</p> <ol style="list-style-type: none"> 1. Go to Setting 2. Resource 3. WSL integration 4. Enable Ubuntu 22.04LTS 5. Then hit Apply & restart 6. This may take few minutes 7. After Enabling this we will get Docker in the Ubuntu command line 	 <p>The screenshot shows the Docker Desktop Settings window. On the left sidebar, 'Resources' is selected and highlighted with a red box. Under 'Resources', 'WSL integration' is also highlighted with a red box. On the right, under 'WSL integration', the checkbox 'Enable integration with my default WSL distro' is checked. Below it, 'Enable integration with additional distros:' is shown with a toggle switch for 'Ubuntu-22.04' which is turned on. A red arrow points to the 'Click here' link above the 'Refresh' button.</p>
9	<p>Run following command to check if you are able to access it on Ubuntu</p> <pre>docker --version docker-compose --version</pre>	 <p>The screenshot shows a terminal window with the following output:</p> <pre>ptktrung@DELL-L5511-LT: ~ ptktrung@DELL-L5511-LT:~\$ docker --version Docker version 24.0.6, build ed223bc ptktrung@DELL-L5511-LT:~\$ docker-compose --version Docker Compose version v2.23.0-desktop.1 ptktrung@DELL-L5511-LT:~\$</pre>

10	<p>Run following command to install and update basic packages on Ubuntu</p> <pre>sudo apt update sudo apt upgrade</pre>	
----	---	--

11	<p>Check if cURL already exists: curl --version</p>	<p>If cURL doesn't exist then install : sudo apt-get install curl</p>
12	<p>Check if Go lang exit: go version</p> <p>Try this command:</p> <pre>sudo apt install golang-go</pre> <p>Set PATH:</p> <pre>export GOPATH=\$HOME/go export PATH=\$PATH:\$GOPATH/bin</pre>	<p>If Go doesn't exist then</p> <ol style="list-style-type: none"> 1. Download it via command: sudo wget https://golang.org/dl/go1.16.3.linux-amd64.tar.gz 2. Extract the package via command: tar xvf go1.16.3.linux-amd64.tar.gz
	<p>Run the following command to verify that Go lang is installed successfully : go version</p>	
13	<p>Check if git is installed: git --version</p>	<p>If not, install it: sudo apt-get install git</p>

Install Fabric and Fabric Samples

```
mkdir -p $HOME/go/src/github.com/
```

```
cd $HOME/go/src/github.com
```

```
curl -sSL https://raw.githubusercontent.com/hyperledger/fabric/master/scripts/bootstrap.sh | bash -s
```

```

Windows PowerShell
ptktrung@DELL-L5511-LT: ~/g
curl: (23) Failure writing output to destination
ptktrung@DELL-L5511-LT: ~/go/src/github.com$ curl -sSL https://raw.githubusercontent.com/hyperledger/fabric/master/scripts/bootstrap.sh | bash -s

Clone hyperledger/fabric-samples repo

===> Cloning hyperledger/fabric-samples repo
Cloning into 'fabric-samples'...
remote: Enumerating objects: 13012, done.
remote: Counting objects: 100% (1044/1044), done.
remote: Compressing objects: 100% (518/518), done.
remote: Total 13012 (delta 541), reused 804 (delta 475), pack-reused 11968
Receiving objects: 100% (13012/13012), 23.00 MiB | 10.01 MiB/s, done.
Resolving deltas: 100% (6995/6995), done.
fabric-samples v2.5.4 does not exist, defaulting to main. fabric-samples main branch is intended to work with recent versions of fabric.

Pull Hyperledger Fabric binaries

===> Downloading version 2.5.4 platform specific fabric binaries
===> Downloading: https://github.com/hyperledger/fabric/releases/download/v2.5.4/hyperledger-fabric-linux-amd64-2.5.4.tar.gz
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
  0     0     0      0     0      0     0      0      0      0      0      0      0
34 99.3M   34 34.5M    0     0  533k      0  0:03:10  0:01:06  0:02:04 140k^[[1;3H

```

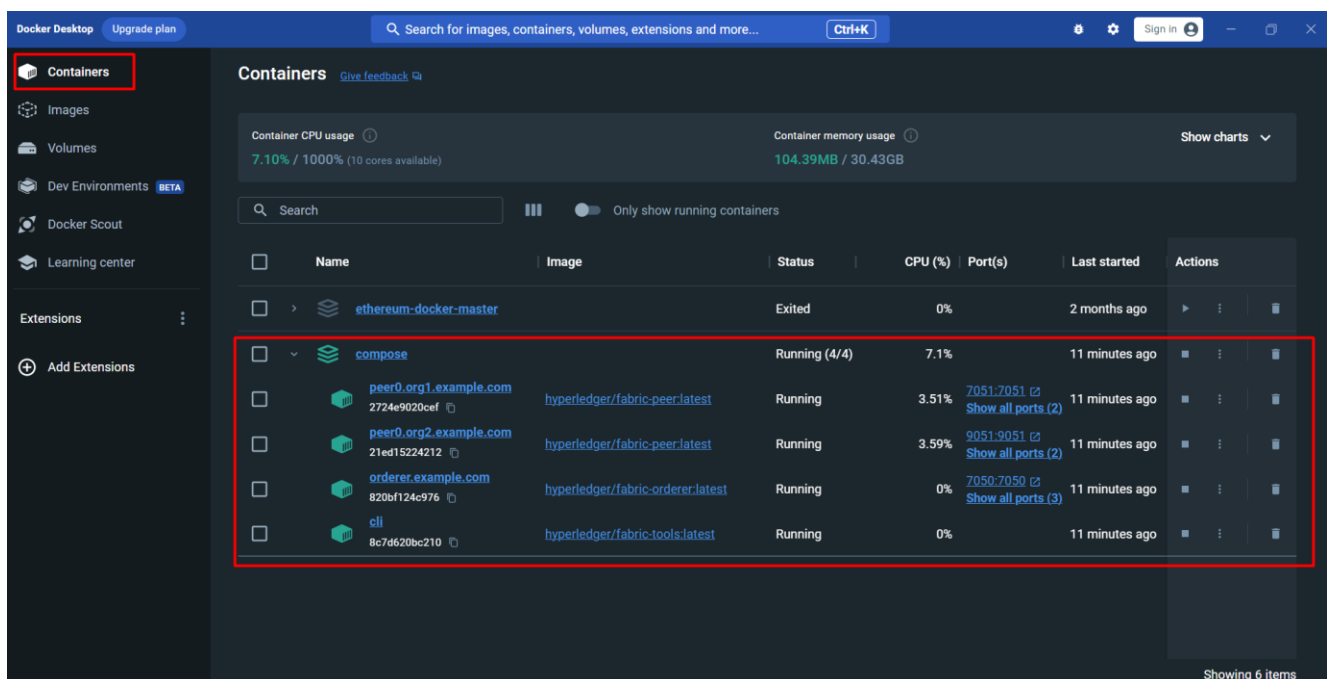
Test HyperLedger Fabric Network

Navigate to Fabric folder	cd \$wsl cd go/src/github.com/fabric-samples
Go to test-network	cd test-network
Run the command to remove existing any container from previous run (if any)	./network.sh down
Run the command to boot up fabric test network	./network.sh up

<pre> ptktrung@DELL-L5511-LT: ~/g ptktrung@DELL-L5511-LT:~\$ cd \$wsl ptktrung@DELL-L5511-LT:~\$ cd go/src/github.com/fabric-samples ptktrung@DELL-L5511-LT:~/go/src/github.com/fabric-samples\$ cd test-network ptktrung@DELL-L5511-LT:~/go/src/github.com/fabric-samples/test-network\$./network.sh up Using docker and docker-compose </pre>	
<pre> + cryptogen generate --config=./organizations/cryptogen/crypto-config-orderer.yaml --output=organizations + res=0 Generating CCP files for Org1 and Org2 [+] Building 0.0s (0/0) [+] Running 8/8 ✓ Network fabric_test Created 0.0s ✓ Volume "compose_orderer.example.com" Created 0.0s ✓ Volume "compose_peer0.org1.example.com" Created 0.0s ✓ Volume "compose_peer0.org2.example.com" Created 0.0s ✓ Container peer0.org2.example.com Started 0.1s ✓ Container orderer.example.com Started 0.1s ✓ Container peer0.org1.example.com Started 0.0s ✓ Container cli Started 0.0s CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES 8c7d620bc210 hyperledger/fabric-tools:latest "/bin/bash" 1 second ago Up Less than a seco nd 21ed15224212 hyperledger/fabric-peer:latest "peer node start" 1 second ago Up Less than a seco nd 0.0.0.0:9051->9051/tcp, 7051/tcp, 0.0.0.0:9445->9445/tcp peer0.org2.example.com 820bf124c976 hyperledger/fabric-orderer:latest "orderer" 1 second ago Up Less than a seco nd 0.0.0.0:7050->7050/tcp, 0.0.0.0:7053->7053/tcp, 0.0.0.0:9443->9443/tcp orderer.example.com 2724e9020cef hyperledger/fabric-peer:latest "peer node start" 1 second ago Up Less than a seco nd 0.0.0.0:7051->7051/tcp, 0.0.0.0:9444->9444/tcp peer0.org1.example.com 8e3db2f4f888 ethereum/client-go "geth --datadir=/roo... 2 months ago Exited (1) 2 months ago ethereum-docker-master-geth-1 ptktrung@DELL-L5511-LT:~/go/src/github.com/fabric-samples/test-network\$ </pre>	

See HyperLedger Fabric image running on Docker

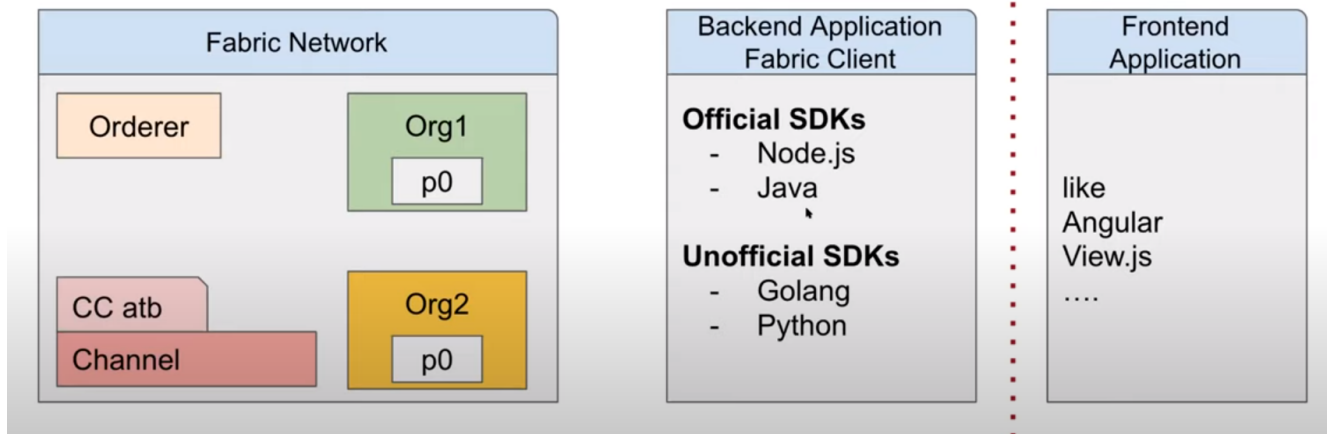
```
ptktrung@DELL-L5511-LT: ~/g x + v
command 'docker' from deb docker.io (24.0.5-0ubuntu1~22.04.1)
Try: sudo apt install <deb name>
ptktrung@DELL-L5511-LT:~/go/src/github.com/fabric-samples/test-network$ docker images
REPOSITORY                                TAG                IMAGE ID           CREATED           SIZE
ethereum-docker-master-netstats          latest            c1f308056351      2 months ago     328MB
ethereum/client-go                       latest            bbd6b2ce3f0d      2 months ago     67.9MB
hyperledger/fabric-ca                    1.5               0f07bbee6fb8      2 months ago     223MB
hyperledger/fabric-ca                    1.5.7             0f07bbee6fb8      2 months ago     223MB
hyperledger/fabric-ca                    latest            0f07bbee6fb8      2 months ago     223MB
hyperledger/fabric-tools                 2.5               b2f3af4021be      3 months ago     551MB
hyperledger/fabric-tools                 2.5.4             b2f3af4021be      3 months ago     551MB
hyperledger/fabric-tools                 latest            b2f3af4021be      3 months ago     551MB
hyperledger/fabric-peer                  2.5               4f8d1b54d8b0      3 months ago     135MB
hyperledger/fabric-peer                  2.5.4             4f8d1b54d8b0      3 months ago     135MB
hyperledger/fabric-peer                  latest            4f8d1b54d8b0      3 months ago     135MB
hyperledger/fabric-orderer               2.5               7a73187b5c49      3 months ago     106MB
hyperledger/fabric-orderer               2.5.4             7a73187b5c49      3 months ago     106MB
hyperledger/fabric-orderer               latest            7a73187b5c49      3 months ago     106MB
hyperledger/fabric-ccenv                 2.5               6dac93f94c87      3 months ago     656MB
hyperledger/fabric-ccenv                 2.5.4             6dac93f94c87      3 months ago     656MB
hyperledger/fabric-ccenv                 latest            6dac93f94c87      3 months ago     656MB
hyperledger/fabric-baseos                2.5               3854817b987d      3 months ago     122MB
hyperledger/fabric-baseos                2.5.4             3854817b987d      3 months ago     122MB
hyperledger/fabric-baseos                latest            3854817b987d      3 months ago     122MB
node                                     16.14-alpine      59b389513e8a      19 months ago    111MB
ptktrung@DELL-L5511-LT:~/go/src/github.com/fabric-samples/test-network$
```



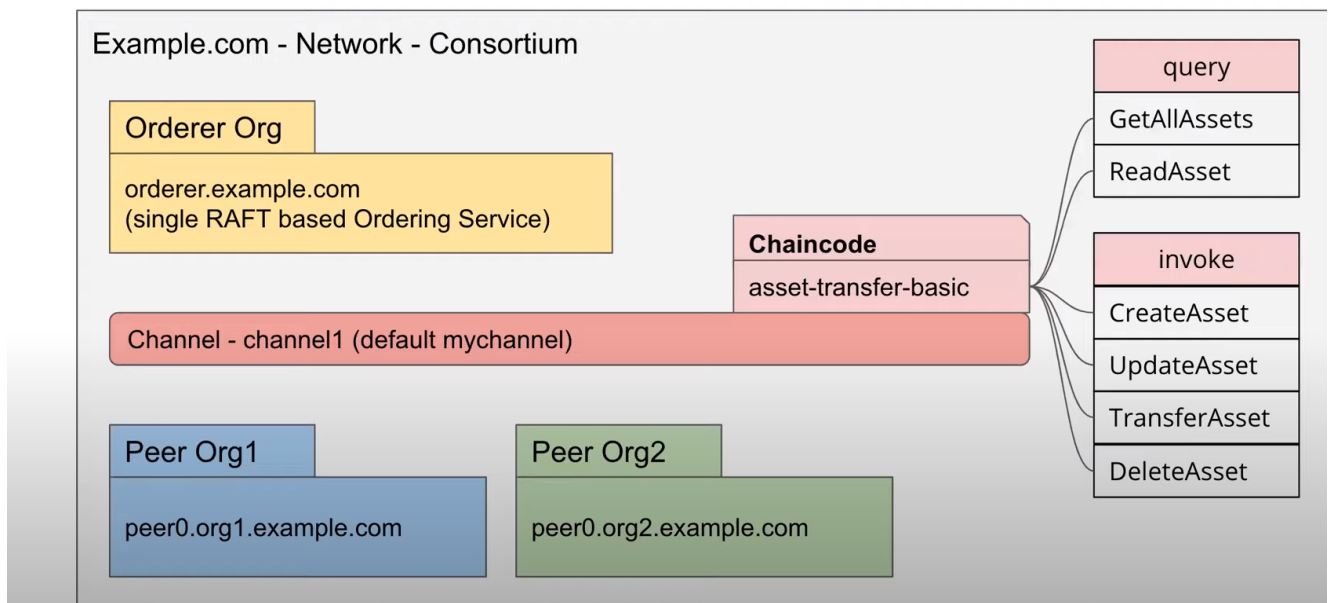
https://www.youtube.com/watch?v=v9ih7_rQmLE&t=39s

The Whole Picture

Chaincode: asset-transfer-basic



Overview of the Test Network



https://hyperledger-fabric.readthedocs.io/en/latest/test_network.html

Fullstack Dev with HF by IBM : <https://www.youtube.com/watch?v=J1RfcEzD9rw&t=1608s>

<https://github.com/horeaporutiu/VSCoDeTutorial>

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