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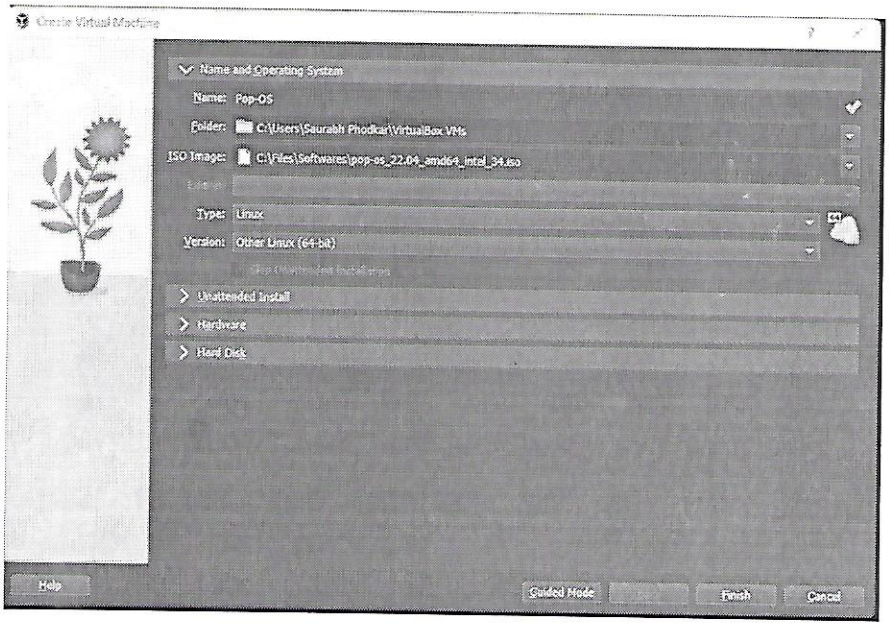
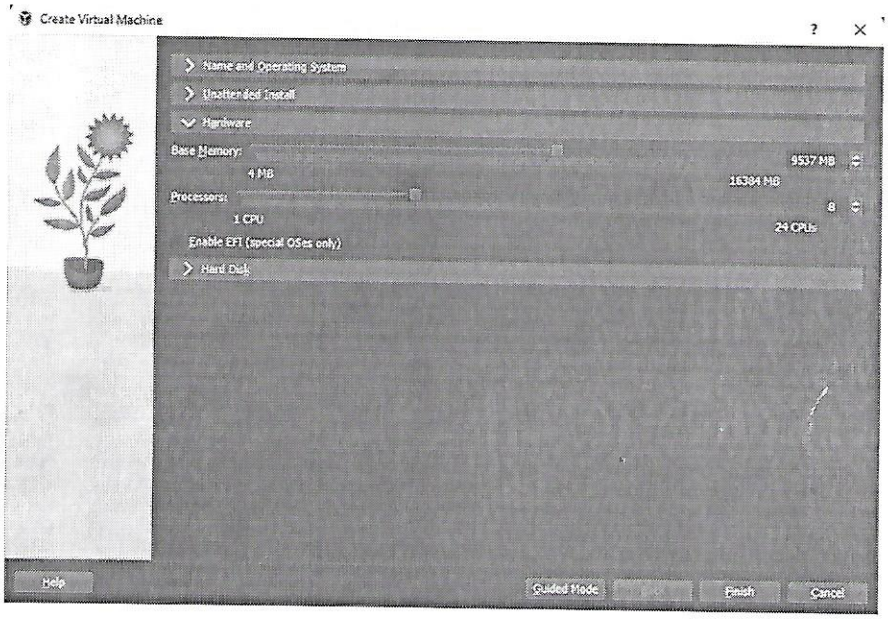
Block chain Assignment

HYPERLEDGER FABRIC INSTALLATIONS, DEPLOYING AND RUNNING THE FIRST TEST NETWORK

Step 1: Install Linux





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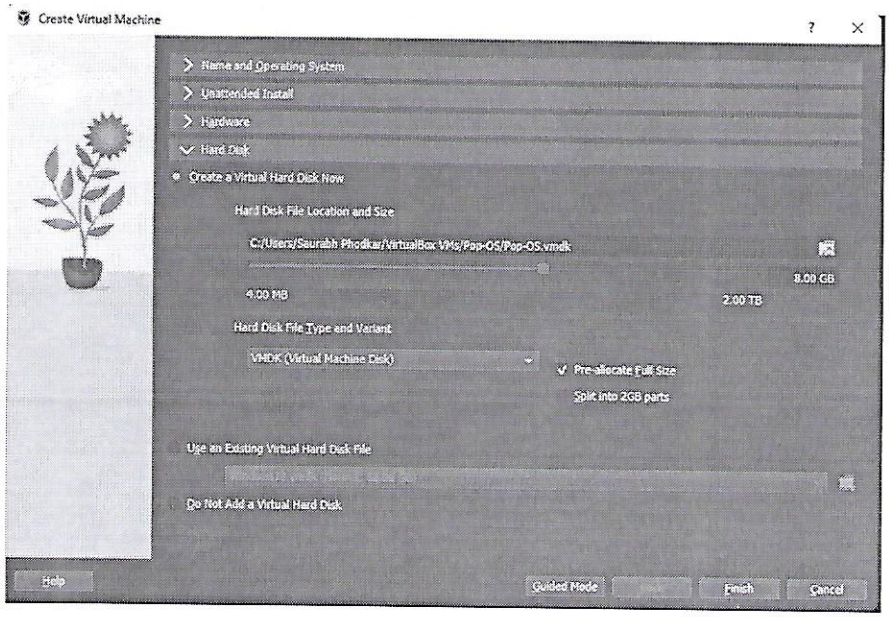

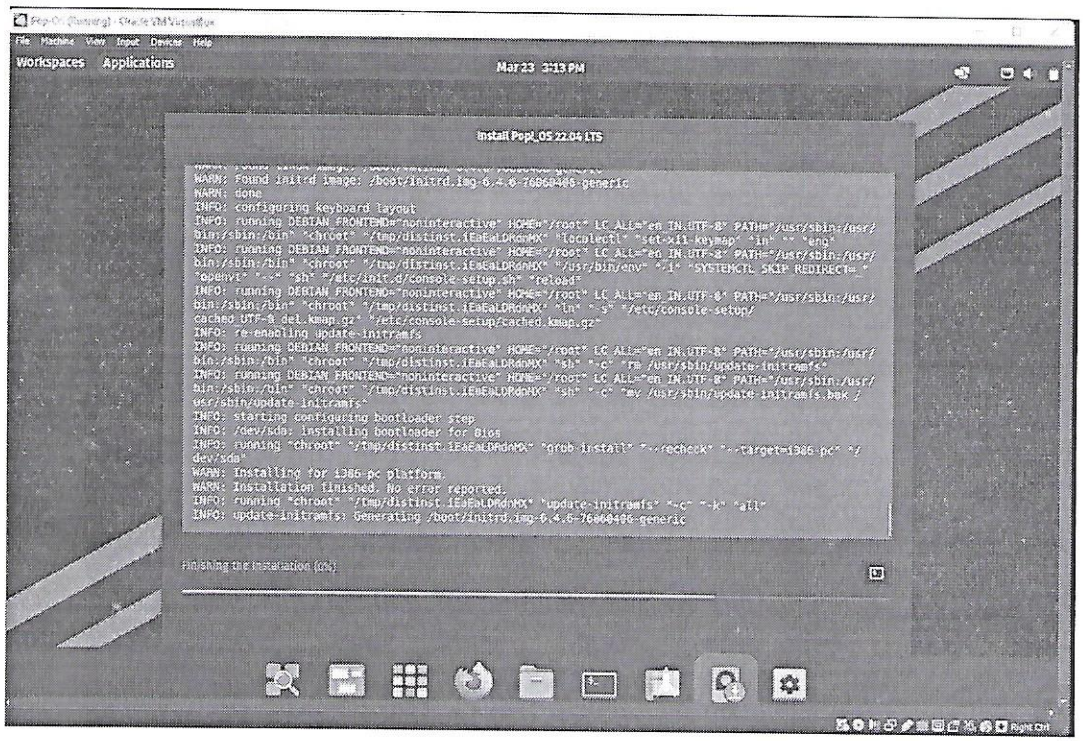

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Step 2: Make sure Linux is updated

```
k@pop-os:~
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

k@pop-os: $ sudo apt update && sudo apt upgrade -y
[sudo] password for k:
Hit:1 http://apt.pop-os.org/proprietary jammy InRelease
Hit:2 http://apt.pop-os.org/release jammy InRelease
Hit:3 http://apt.pop-os.org/ubuntu jammy InRelease
Hit:4 http://apt.pop-os.org/ubuntu jammy-security InRelease
Hit:5 http://apt.pop-os.org/ubuntu jammy-updates InRelease
Hit:6 http://apt.pop-os.org/ubuntu jammy-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
341 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  liblua5.4-0 libnss-myhostname linux-headers-6.6.10-76060610 linux-headers-6.6.10-76060610-generic
  linux-image-6.6.10-76060610-generic linux-modules-6.6.10-76060610-generic systemd-hwe-hwdb ubuntu-pro-client
  ubuntu-pro-client-l10n
The following packages will be upgraded:
  alsa-ucm-conf apparmor appstream-data-pop appstream-data-pop-icons apt apt-utils avahi-autoipd avahi-daemon avahi-utils
  base-files bash bind9-host bind9-libs binutils binutils-common binutils-x86-64-linux-gnu coreutils cryptsetup
  cryptsetup-bin cryptsetup-initramfs cups cups-bsd cups-client cups-common cups-core-drivers cups-daemon cups-ipp-utils
  cups-ppdc cups-server-common curl distro-info distro-info-data dns-root-data dnsmasq-base dpkg dpkg-dev evince
  evince-common firefox firmware-manager-notify firmware-manager-shared firmware-sof-signed fonts-noto-color-emoji
  fonts-opensymbol fwupd ghostscript ghostscript-x gir1.2-javascriptcoregtk-4.0 gir1.2-webkit2-4.0 gnome-control-center
  gnome-control-center-data gnome-control-center-faces gnome-shell-extension-system76-power gstreamer1.0-pipewire ifupdown
  initramfs-tools initramfs-tools-bin initramfs-tools-core intel-microcode iptables language-pack-ar language-pack-ar-base
```

Step 3: sudo apt-get install curl

```
root@pop-os:/home/k# sudo apt-get install curl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
curl is already the newest version (7.81.0-1ubuntu1.15).
curl set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@pop-os:/home/k#
```

Step 4: sudo apt-get golang-go

```
root@pop-os:/home/k# sudo apt-get install golang-go
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  golang-1.18-go golang-1.18-src golang-src
Suggested packages:
  bzr | brz mercurial subversion
The following NEW packages will be installed:
  golang-1.18-go golang-1.18-src golang-go golang-src
0 upgraded, 4 newly installed, 0 to remove and 0 not upgraded.
Need to get 82.3 MB of archives.
After this operation, 436 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Step 5: export GOPATH=$HOME/go

export PATH=$PATH:$GOPATH/bin

```
root@pop-os:/home/k# export GOPATH=$HOME/go
root@pop-os:/home/k# export PATH=$PATH:$GOPATH/bin
root@pop-os:/home/k#
```

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Step 6: sudo apt-get install nodejs

```
root@pop-os:/home/k# sudo apt-get install nodejs
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  javascript-common libc-ares2 libjs-highlight.js libnode72 nodejs-doc
Suggested packages:
  apache2 | lighttpd | httpd npm
The following NEW packages will be installed:
  javascript-common libc-ares2 libjs-highlight.js libnode72 nodejs nodejs-doc
0 upgraded, 6 newly installed, 0 to remove and 0 not upgraded.
Need to get 13.7 MB of archives.
After this operation, 54.0 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Step 7: sudo apt-get install python3

```
root@pop-os:/home/k# sudo apt-get install python3
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
python3 is already the newest version (3.10.6-1~22.04).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@pop-os:/home/k#
```

Step 8: sudo apt-get install docker

```
root@pop-os:/home/k# sudo apt-get install docker
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  wmdocker
The following NEW packages will be installed:
  docker wmdocker
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 14.3 kB of archives.
After this operation, 58.4 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Step 9: . sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"

```
root@pop-os:/home/k# sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb_release -cs) sta
ble"
Repository: 'deb [arch=amd64] https://download.docker.com/linux/ubuntu jammy stable'
Description:
Archive for codename: jammy components: stable
More info: https://download.docker.com/linux/ubuntu
Adding repository.
Press [ENTER] to continue or Ctrl-c to cancel.
Adding deb entry to /etc/apt/sources.list.d/archive_uri-https_download_docker_com_linux_ubuntu-jammy.list
Adding disabled deb-src entry to /etc/apt/sources.list.d/archive_uri-https_download_docker_com_linux_ubuntu-jammy.list
Get:1 https://download.docker.com/linux/ubuntu jammy InRelease [48.8 kB]
Err:1 https://download.docker.com/linux/ubuntu jammy InRelease
  The following signatures couldn't be verified because the public key is not available: NO_PUBKEY 7EA0A9C3F273FCD8
Hit:2 http://apt.pop-os.org/proprietary jammy InRelease
Hit:3 http://apt.pop-os.org/release jammy InRelease
Hit:4 http://apt.pop-os.org/ubuntu jammy InRelease
Hit:5 http://apt.pop-os.org/ubuntu jammy-security InRelease
Hit:6 http://apt.pop-os.org/ubuntu jammy-updates InRelease
Hit:7 http://apt.pop-os.org/ubuntu jammy-backports InRelease
Reading package lists... 7%
```

Step 10 : apt-cache policy docker-ce

```
root@pop-os:/home/k# sudo apt-cache policy docker-ce
docker-ce:
  Installed: (none)
  Candidate: (none)
  Version table:
root@pop-os:/home/k#
```

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Step 11: . sudo apt-get install docker-compose

```
root@pop-os:/home/k# sudo apt-get install docker-compose
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bridge-utils containerd docker.io pigz python3-attr python3-docker python3-dockerpty python3-docopt python3-dotenv
  python3-jsonschema python3-pyrsistent python3-setuptools python3-texttable python3-websocket runc ubuntu-fan
Suggested packages:
  aufs-tools btrfs-progs cgroupfs-mount | cgroup-lite debootstrap docker-doc rinse zfs-fuse | zfsutils python-attr-doc
  python-jsonschema-doc python-setuptools-doc
The following NEW packages will be installed:
  bridge-utils containerd docker-compose docker.io pigz python3-attr python3-docker python3-dockerpty python3-docopt
  python3-dotenv python3-jsonschema python3-pyrsistent python3-setuptools python3-texttable python3-websocket runc
  ubuntu-fan
0 upgraded, 17 newly installed, 0 to remove and 0 not upgraded.
Need to get 70.2 MB of archives.
After this operation, 270 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Step 12: . sudo curl -sSL https://goo.gl/6wtTN5 |sudo bash -s 1.1.0

```
root@pop-os:/home/k# sudo curl -sSL https://goo.gl/6wtTN5 |sudo bash -s 1.1.0

Clone hyperledger/fabric-samples repo

===> Cloning hyperledger/fabric-samples repo
Cloning into 'fabric-samples'...
remote: Enumerating objects: 13206, done.
remote: Counting objects: 100% (89/89), done.
remote: Compressing objects: 100% (60/60), done.
remote: Total 13206 (delta 20), reused 79 (delta 18), pack-reused 13117
Receiving objects: 100% (13206/13206), 22.80 MiB | 3.41 MiB/s, done.
Resolving deltas: 100% (7262/7262), done.
===> Checking out v1.1.0 of hyperledger/fabric-samples

Pull Hyperledger Fabric binaries

===> Downloading version x86_64-1.1.0 platform specific fabric binaries
===> Downloading:  https://github.com/hyperledger/fabric/releases/download/v1.1.0/hyperledger-fabric-linux-amd64-1.1.0.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
100 35.4M  100 35.4M    0     0  2645k      0  0:00:13  0:00:13 --:--:-- 3530k
===> Done.
===> Downloading version x86_64-1.1.5.9 platform specific fabric-ca-client binary
===> Downloading:  https://github.com/hyperledger/fabric-ca/releases/download/v1.1.5.9/hyperledger-fabric-ca-linux-amd64-1.1.5.9.t
ar.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
100 28.4M  100 28.4M    0     0  2989k      0  0:00:09  0:00:09 --:--:-- 3652k
===> Done.
```

Step 13: sudochmod 777 -R fabric-samples

```
+ configtxgen -profile TwoOrgsChannel -outputCreateChannelTx ./channel-artifacts/channel.tx -channelID mychannel
2024-03-23 21:54:23.122 IST [common/tools/configtxgen] main -> INFO 001 Loading configuration
2024-03-23 21:54:23.126 IST [common/tools/configtxgen] doOutputChannelCreateTx -> INFO 002 Generating new channel configtx
2024-03-23 21:54:23.126 IST [msp] getMspConfig -> INFO 003 Loading NodeOUs
2024-03-23 21:54:23.127 IST [msp] getMspConfig -> INFO 004 Loading NodeOUs
2024-03-23 21:54:23.161 IST [common/tools/configtxgen] doOutputChannelCreateTx -> INFO 005 Writing new channel tx
+ res=0
+ set +x

#################################################################
#######    Generating anchor peer update for Org1MSP   ##########
#################################################################
+ configtxgen -profile TwoOrgsChannel -outputAnchorPeersUpdate ./channel-artifacts/Org1MSPanchors.tx -channelID mychannel -asO
rg Org1MSP
2024-03-23 21:54:23.263 IST [common/tools/configtxgen] main -> INFO 001 Loading configuration
2024-03-23 21:54:23.267 IST [common/tools/configtxgen] doOutputAnchorPeersUpdate -> INFO 002 Generating anchor peer update
2024-03-23 21:54:23.267 IST [common/tools/configtxgen] doOutputAnchorPeersUpdate -> INFO 003 Writing anchor peer update
+ res=0
+ set +x

#################################################################
#######    Generating anchor peer update for Org2MSP   ##########
#################################################################
+ configtxgen -profile TwoOrgsChannel -outputAnchorPeersUpdate ./channel-artifacts/Org2MSPanchors.tx -channelID mychannel -asO
rg Org2MSP
2024-03-23 21:54:23.507 IST [common/tools/configtxgen] main -> INFO 001 Loading configuration
2024-03-23 21:54:23.511 IST [common/tools/configtxgen] doOutputAnchorPeersUpdate -> INFO 002 Generating anchor peer update
2024-03-23 21:54:23.511 IST [common/tools/configtxgen] doOutputAnchorPeersUpdate -> INFO 003 Writing anchor peer update
+ res=0
+ set +x

root@pop-os:/home/k/fabric-samples/first-network#
```

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Step 14: cd fabric-samples/first-network && sudo ./byfn.sh generate

```
root@pop-os:/home/k/fabric-samples/first-network# sudo ./byfn.sh up
Starting with channel 'mychannel' and CLI timeout of '10' seconds and CLI delay of '3' seconds
Continue? [Y/n] y
proceeding ...
2024-03-23 16:25:01.852 UTC [main] main -> INFO 001 Exiting.....
LOCAL_VERSION=1.1.0
DOCKER_IMAGE_VERSION=1.1.0
Creating network "net_byfn" with the default driver
Creating volume "net_orderer.example.com" with default driver
Creating volume "net_peer0.org1.example.com" with default driver
Creating volume "net_peer1.org1.example.com" with default driver
Creating volume "net_peer0.org2.example.com" with default driver
Creating volume "net_peer1.org2.example.com" with default driver
Creating peer1.org1.example.com ... done
Creating peer0.org2.example.com ... done
Creating orderer.example.com    ... done
Creating peer0.org1.example.com ... done
Creating peer1.org2.example.com ... done
Creating cli                    ... done

 ____    _____      _      ____    _____
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Build your first network (BYFN) end-to-end test

Channel name : mychannel
```

Output Good.
24/3/24.