**Creating a course on OpenEdx using Ironwood Devstack**

1. Installing docker engine, docker machine and docker compose.

The docker based installing allows the resources of your system to be utilized in an optimal way. Docker is based on the principle of containerization. For proper working of the devstack we need the Docker engine, docker machine and docker compose. We shall install each of them one after another.

For installing the docker engine the following commands need to be followed.

1. sudo apt-get update

2. sudo apt-get install \

apt-transport-https \

ca-certificates \

curl \

gnupg-agent \

software-properties-common

3. curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -

4. sudo apt-key fingerprint 0EBFCD88

5. sudo add-apt-repository \

"deb [arch=amd64] https://download.docker.com/linux/ubuntu \

$(lsb\_release -cs) \

stable"

6. sudo apt-get update

7. sudo apt-get install docker-ce docker-ce-cli containerd.io

8. apt-cache madison docker-ce

9. sudo apt-get install docker-ce=<VERSION\_STRING> docker-ce-cli=<VERSION\_STRING> containerd.io

10. sudo docker run hello-world

For installing the docker machine the following commands needs to be followed :

1. base=https://github.com/docker/machine/releases/download/v0.16.0 &&

curl -L $base/docker-machine-$(uname -s)-$(uname -m) >/tmp/docker-machine &&

sudo install /tmp/docker-machine /usr/local/bin/docker-machine

For installing docker compose the following commands needs to be followed:

1. sudo curl -L "https://github.com/docker/compose/releases/download/1.24.0/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
2. sudo chmod +x /usr/local/bin/docker-compose

For checking the successful installation of all the above you can use the --version command to check the installed version.

2. Installing Ironwood Devstack

Devstack comes with different variations as per the different versions. The three popular versions of the devstack are Ginkgo, Hawthron and Ironwood.

The following commands show the Ironwood-release installation of the devstack.

1. git clone https://github.com/edx/devstack
2. cd devstack
3. git checkout open-release/ironwood.master
4. export OPENEDX\_RELEASE=ironwood.master
5. make dev.checkout
6. make dev.clone
7. make dev.provision

On execution of the dev.provision if you face an error as follows:

1. ./provision.sh: line 21: /usr/local/bin/docker-compose: Permission denied

Makefile:59: recipe for target 'dev.provision.run' failed

make: \*\*\* [dev.provision.run] Error 126

Solution :

$ sudo -i

$ curl -L https://github.com/docker/compose/releases/download/1.18.0/docker-compose-`uname -s`-`uname -m` -o /usr/local/bin/docker-compose

$ chmod 755 /usr/local/bin/docker-compose

$ exit

2. TASK [common : Update expired apt keys] \*\*\*\*\*\*\*\*\*\*\*\*\*\*

fatal: [127.0.0.1]: FAILED! => {"changed": true, "cmd": "apt-key adv --recv-keys --keyserver keyserver.ubuntu.com 69464050", "delta": "0:02:00.744139", "end": "2019-05-24 07:49:07.605347", "failed": true, "rc": 2, "start": "2019-05-24 07:47:06.861208", "stderr": "gpg: requesting key 69464050 from hkp server keyserver.ubuntu.com\ngpg: keyserver timed out\ngpg: keyserver receive failed: keyserver error", "stdout": "Executing: /tmp/tmp.NmWIivV5Jo/gpg.1.sh --recv-keys\n--keyserver\nkeyserver.ubuntu.com\n69464050", "stdout\_lines": ["Executing: /tmp/tmp.NmWIivV5Jo/gpg.1.sh --recv-keys", "--keyserver", "keyserver.ubuntu.com", "69464050"], "warnings": []}

to retry, use: --limit @/edx/app/edx\_ansible/edx\_ansible/playbooks/demo.retry

This error occurs due to the fetching to apt-keys from an expired link.

To resolve follow the following steps:

1. sudo exec -it edx.devstack.lms bash
2. cd app/edx\_ansible/edx\_ansible/playbooks/roles/common\_vars/defaults/
3. vi main.yml
4. On entering the main.yml file in vim editor change the link for the keyword

COMMON\_EDX\_PPA\_KEY from keyserver.ubuntu.com to hkp://keyserver.ubuntu.com:80

5. Exit

On successfully running dev.provision you will have 15 docker-containers running. The list of them can be obtained using command : docker ps

The list of docker-containers are : [Docker-containers List](https://drive.google.com/open?id=0B168SrnPp4BpZ1RCQ1VncU81VEZYanl2SUNWN2dtRUg1bGRv)

The Provision Log for the tasks executed are : [provision.log](https://drive.google.com/open?id=0B168SrnPp4BpclQ3d3gwbDNWLWtrUzduYUt6Vko4S2h6bzBz)