UPES

UNIVERSITY WITH A PURPOSE

Application Containerization

EXPERIMENT-1

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SUBMITTED TO:-
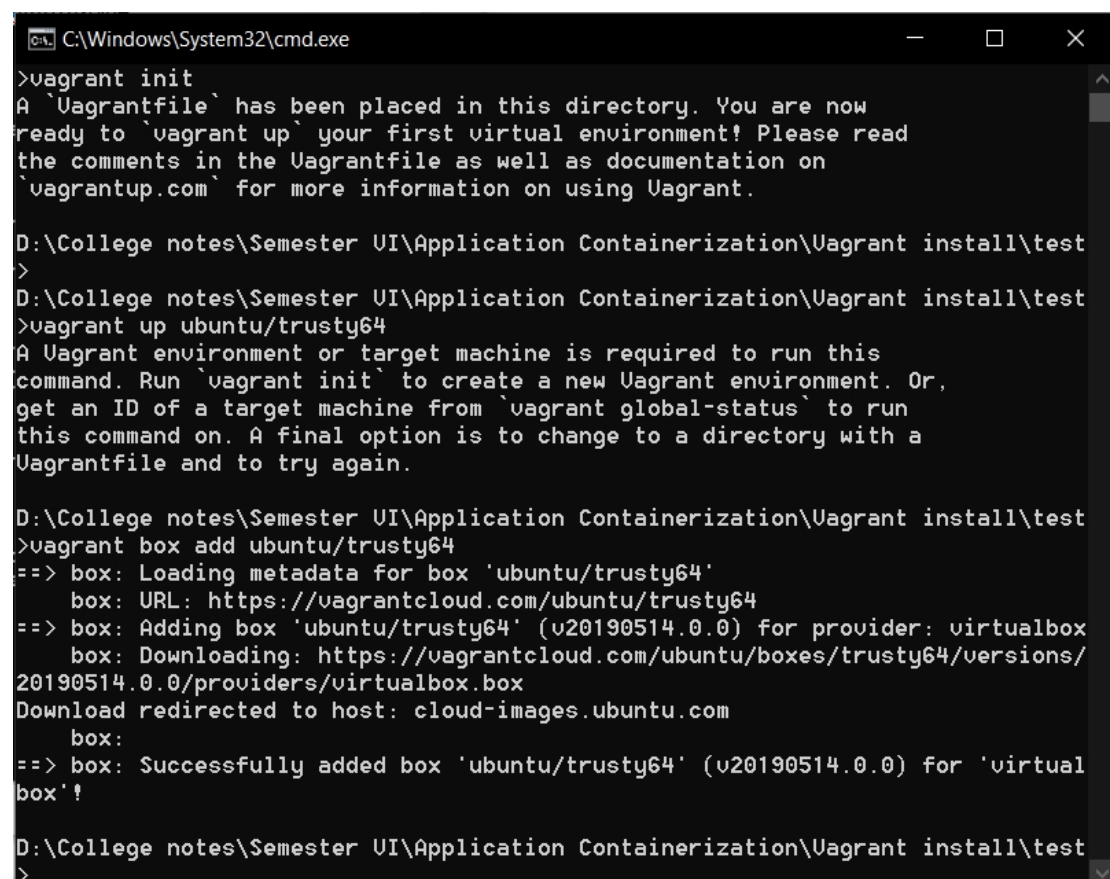**MR. HITESH KUMAR SHARMA**

AIM -   Create a Vagrant Vm

We have installed vagrant in our system from official website of vagrant.
Now we are try to initiaize the vagrant in specific folder using the command.

/> Vagrant init

It is initialized successfully , now we download the box of ubuntu known as "ubuntu/trusty64 ".

/> Vagrant box add ubuntu/trusty64

Now we initialize the ubuntu a specified directory.
First go the location of your directory where we have to initialize the ubuntu, then use the command

/> Vagrant init ubuntu/trusty64

A vagrant file has been created in the folder
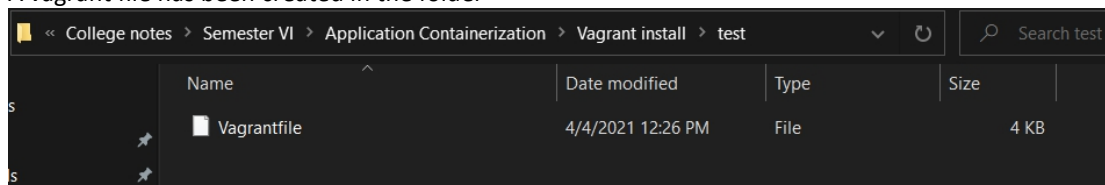
Now we are ready to run the virtual machine.

But first we have to install the virtual box, or hyper-V to run the virtual machine because vagrant use the 3rd party software to run the virtual machine.

So we have to install the virtual box in out system.
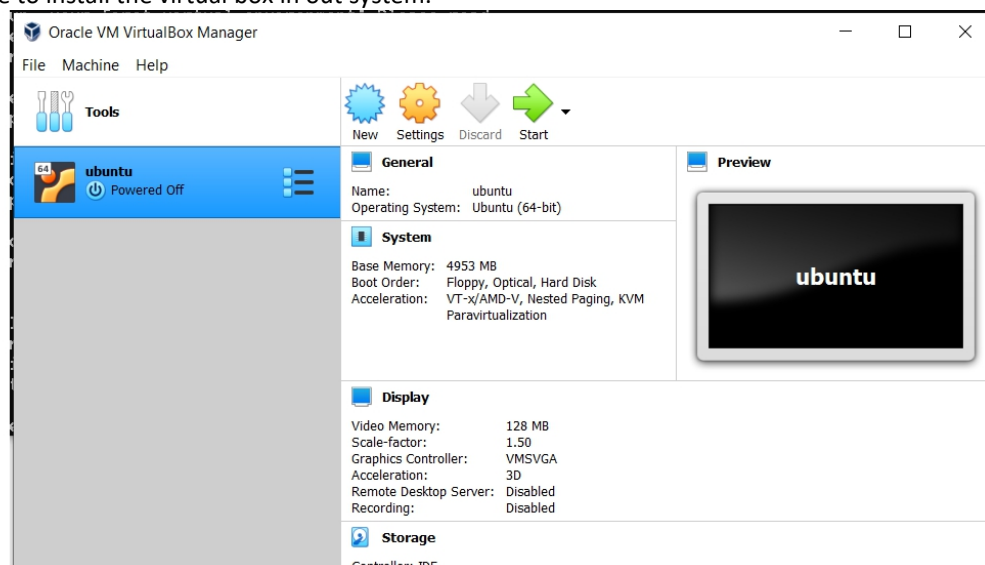
Now we are ready to run the machine.

/> Vagrant up

We have successfully installed the virtual machine in virtual box.

```
D:\College notes\Semester VI\Application Containerization\Vagrant install\test>vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'ubuntu/trusty64'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'ubuntu/trusty64' version '20190514.0.0' is up to date...
==> default: Setting the name of the VM: test_default_1617520091128_73624
==> default: Clearing any previously set forwarded ports...
Vagrant is currently configured to create VirtualBox synced folders with
the `SharedFoldersEnableSymlinksCreate` option enabled. If the Vagrant
guest is not trusted, you may want to disable this option. For more
information on this option, please refer to the VirtualBox manual:

  https://www.virtualbox.org/manual/ch04.html#sharedfolders

This option can be disabled globally with an environment variable:

  VAGRANT_DISABLE_VBOXSYMLINKCREATE=1

or on a per folder basis within the Vagrantfile:

  config.vm.synced_folder '/host/path', '/guest/path', SharedFoldersEnableSymlinksCreate: false
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default: Warning: Connection reset. Retrying...
    default: Warning: Connection aborted. Retrying...
    default: Warning: Connection reset. Retrying...
    default: Warning: Connection reset. Retrying...
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: The guest additions on this VM do not match the installed version of
    default: VirtualBox! In most cases this is fine, but in rare cases it can
    default: prevent things such as shared folders from working properly. If you see
    default: shared folder errors, please make sure the guest additions within the
    default: virtual machine match the version of VirtualBox you have installed on
    default: your host and reload your VM.
```
```
==> default: Machine booted and ready!
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    default: shared folder errors, please make sure the guest additions within the
    default: virtual machine match the version of VirtualBox you have installed on
    default: your host and reload your VM.
    default:
    default: Guest Additions Version: 4.3.40
    default: VirtualBox Version: 6.1
==> default: Mounting shared folders...
    default: /vagrant => D:/College notes/Semester VI/Application Containerization/Vagrant install/test

D:\College notes\Semester VI\Application Containerization\Vagrant install\test>
```
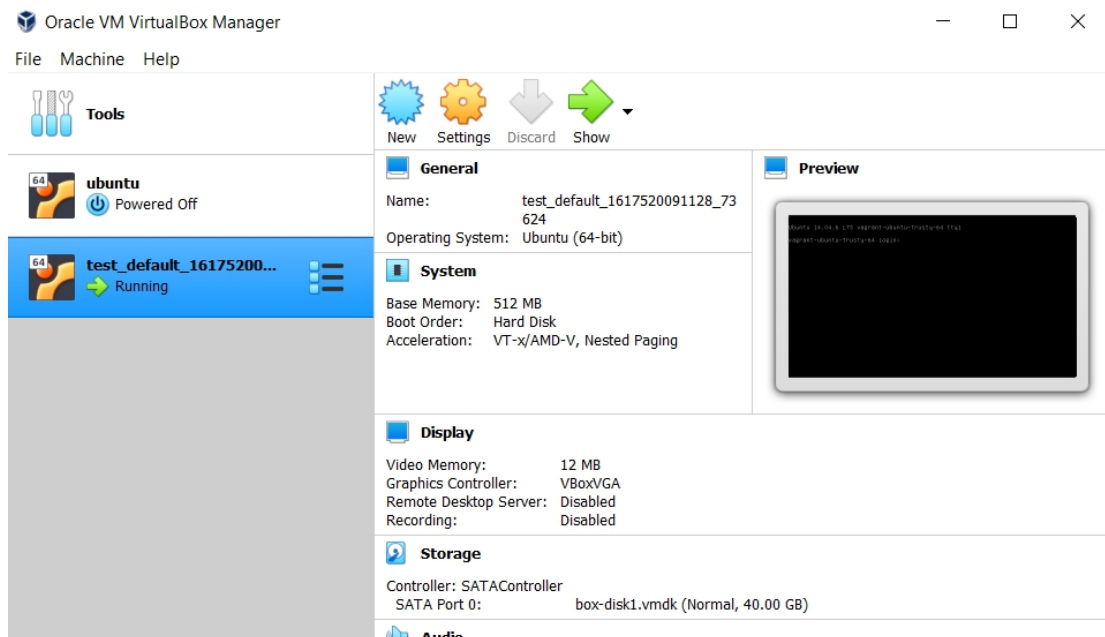
Vm, Virtual box, vagrant and ubuntu has been install successfully in the system.

Now we have to use it efficiently.

First of all we have to open the ubuntu console using ssh.

**/>vagrant ssh**

It may require a password, it suggest that the password is with public key, sometimes it doesn't work So there is default password for the vagrant.

Password: **vagrant**

```
D:\College notes\Semester VI\Application Containerization\Vagrant install\test>vagrant ssh
vagrant@127.0.0.1's password:
Welcome to Ubuntu 14.04.6 LTS (GNU/Linux 3.13.0-170-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

 System information disabled due to load higher than 1.0

UA Infrastructure Extended Security Maintenance (ESM) is not enabled.

0 updates can be installed immediately.
0 of these updates are security updates.

Enable UA Infrastructure ESM to receive 64 additional security updates.
See https://ubuntu.com/advantage or run: sudo ua status

New release '16.04.7 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


vagrant@vagrant-ubuntu-trusty-64:~$
```

Now lets install docker in the running machine. First update the machine repository

/>   Sudo apt update

Now install the docker, first specify the repository in the machine from where it have to download the package of docker.

```
/> echo \

  "deb [arch=amd64 signed-by=/usr/share/keyrings/docker-archive-keyring.gpg]
https://download.docker.com/linux/ubuntu \

  $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
```

Add Docker's official GPG key:

```
$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o
/usr/share/keyrings/docker-archive-keyring.gpg
```

Now install the docker using the command.
/> sudo apt-get install docker-ce

```
root@vagrant-ubuntu-trusty-64:/home/vagrant# clear
root@vagrant-ubuntu-trusty-64:/home/vagrant# sudo apt-get install docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  aufs-tools cgroup-lite git git-man liberror-perl libsystemd-journal0 pigz
Suggested packages:
  git-daemon-run git-daemon-sysvinit git-doc git-el git-email git-gui gitk
  gitweb git-arch git-bzr git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  aufs-tools cgroup-lite docker-ce git git-man liberror-perl
  libsystemd-journal0 pigz
0 upgraded, 8 newly installed, 0 to remove and 1 not upgraded.
Need to get 43.4 MB of archives.
After this operation, 224 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
WARNING: The following packages cannot be authenticated!
  docker-ce
Install these packages without verification? [y/N] y
Get:1 http://archive.ubuntu.com/ubuntu/ trusty-updates/main libsystemd-journal0 amd64 204-5ubuntu20.31 [50.5 kB]
Get:2 http://archive.ubuntu.com/ubuntu/ trusty/universe pigz amd64 2.3-2 [59.4 kB]
Get:3 http://archive.ubuntu.com/ubuntu/ trusty/universe aufs-tools amd64 1:3.2+20130722-1.1 [92.3 kB]
Get:4 http://archive.ubuntu.com/ubuntu/ trusty/main liberror-perl all 0.17-1.1 [21.1 kB]
Get:5 http://archive.ubuntu.com/ubuntu/ trusty-updates/main git-man all 1:1.9.1-1ubuntu0.10 [700 kB]
Get:6 http://archive.ubuntu.com/ubuntu/ trusty-updates/main git amd64 1:1.9.1-1ubuntu0.10 [2,737 kB]
Get:7 http://archive.ubuntu.com/ubuntu/ trusty/main cgroup-lite all 1.9 [3,918 B]
Fetched 43.4 MB in 18s (2,335 kB/s)
Selecting previously unselected package libsystemd-journal0:amd64.
(Reading database ... 63245 files and directories currently installed.)
Preparing to unpack .../libsystemd-journal0_204-5ubuntu20.31_amd64.deb ...
Unpacking libsystemd-journal0:amd64 (204-5ubuntu20.31) ...
Selecting previously unselected package pigz.
Preparing to unpack .../archives/pigz_2.3-2_amd64.deb ...
Unpacking pigz (2.3-2) ...
Selecting previously unselected package aufs-tools.
Preparing to unpack .../aufs-tools_1%3a3.2+20130722-1.1_amd64.deb ...
Unpacking aufs-tools (1:3.2+20130722-1.1) ...
Selecting previously unselected package docker-ce.
docker start/running, process 5446
Setting up liberror-perl (0.17-1.1) ...
Setting up git-man (1:1.9.1-1ubuntu0.10) ...
Setting up git (1:1.9.1-1ubuntu0.10) ...
Setting up cgroup-lite (1.9) ...
cgroup-lite start/running
Processing triggers for libc-bin (2.19-0ubuntu6.15) ...
Processing triggers for ureadahead (0.100.0-16) ...
root@vagrant-ubuntu-trusty-64:/home/vagrant# docker

Usage:  docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Options:
      --config string      Location of client config files (default "/root/.docker")
  -D, --debug              Enable debug mode
  -H, --host list          Daemon socket(s) to connect to
  -l, --log-level string   Set the logging level ("debug"|"info"|"warn"|"error"|"fatal") (default "info")
      --tls                Use TLS; implied by --tlsverify
      --tlscacert string   Trust certs signed only by this CA (default "/root/.docker/ca.pem")
      --tlscert string     Path to TLS certificate file (default "/root/.docker/cert.pem")
      --tlskey string      Path to TLS key file (default "/root/.docker/key.pem")
      --tlsverify          Use TLS and verify the remote
  -v, --version            Print version information and quit

Management Commands:
  config        Manage Docker configs
```

Docker installed successfully.