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EXPERIMENT – 1

Introduction to Vagrant and Vagrantfile

1. Setting Up the Environment:

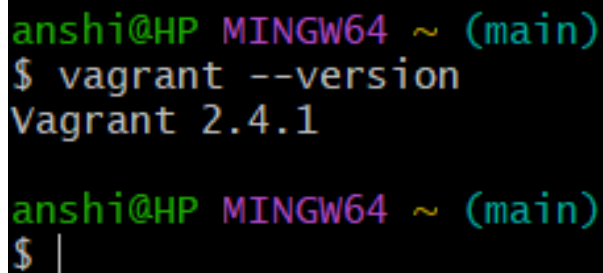
Install Vagrant:

- Download and install Vagrant from the official website.
- Ensure you have VirtualBox installed as it is a commonly used provider with Vagrant.

Verify Installation:

- Open a terminal or command prompt.
- Run the commands to verify the installation

vagrant --version

A terminal window with a black background and green text. The prompt is 'anshi@HP MINGW64 ~ (main)'. The command '\$ vagrant --version' is entered, and the output is 'Vagrant 2.4.1'. Below this, the prompt is shown again with a cursor after the '\$' symbol.

```
anshi@HP MINGW64 ~ (main)
$ vagrant --version
Vagrant 2.4.1

anshi@HP MINGW64 ~ (main)
$ |
```

2. Creating a New Vagrant Project:

Create a Project Directory:

- In your terminal, create a new directory for your Vagrant project and navigate into it:

mkdir vagrant_lab

cd vagrant_lab

```
anshi@HP MINGW64 /d/Academics/Docker
$ mkdir vagrant_lab

anshi@HP MINGW64 /d/Academics/Docker
$ cd vagrant_lab

anshi@HP MINGW64 /d/Academics/Docker/vagrant_lab
$ |
```

3. Initialize Vagrant:

To initialize a new Vagrantfile in your project directory:

vagrant init

```
anshi@HP MINGW64 /d/Academics/Docker/vagrant_lab
$ vagrant init
A `Vagrantfile` has been placed in this directory. You are now
ready to `vagrant up` your first virtual environment! Please read
the comments in the Vagrantfile as well as documentation on
`vagrantup.com` for more information on using Vagrant.

anshi@HP MINGW64 /d/Academics/Docker/vagrant_lab
$ ls
Vagrantfile

anshi@HP MINGW64 /d/Academics/Docker/vagrant_lab
$ |
```

4. Understanding the Vagrantfile:

Open the Vagrantfile in any text editor and modify the Vagrantfile to configure a basic virtual machine.

Default file

```
Vagrantfile X
D: > Academics > Docker > vagrant_lab > Vagrantfile
1  # -*- mode: ruby -*-
2  # vi: set ft=ruby :
3
4  # All Vagrant configuration is done below. The "2" in Vagrant.configure
5  # configures the configuration version (we support older styles for
6  # backwards compatibility). Please don't change it unless you know what
7  # you're doing.
8  Vagrant.configure("2") do |config|
9    # The most common configuration options are documented and commented below.
10   # For a complete reference, please see the online documentation at
11   # https://docs.vagrantup.com.
12
13   # Every Vagrant development environment requires a box. You can search for
14   # boxes at https://vagrantcloud.com/search.
15   config.vm.box = "base"
16
17   # Disable automatic box update checking. If you disable this, then
18   # boxes will only be checked for updates when the user runs
19   # `vagrant box outdated`. This is not recommended.
20   # config.vm.box_check_update = false
21
22   # Create a forwarded port mapping which allows access to a specific port
23   # within the machine from a port on the host machine. In the example below,
24   # accessing "localhost:8080" will access port 80 on the guest machine.
25   # NOTE: This will enable public access to the opened port
26   # config.vm.network "forwarded port", guest: 80, host: 8080
```

Modified file

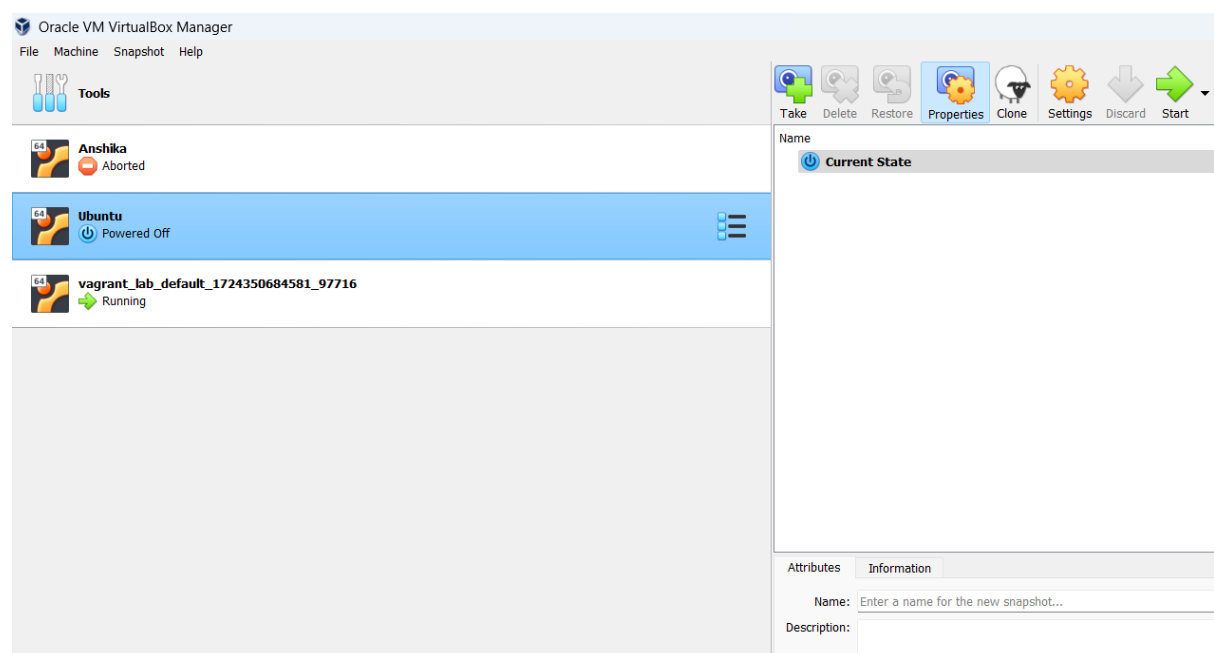
```
Vagrantfile X
D: > Academics > Docker > vagrant_lab > Vagrantfile
1  # -*- mode: ruby -*-
2  # vi: set ft=ruby :
3
4  # All Vagrant configuration is done below. The "2" in Vagrant.configure
5  # configures the configuration version (we support older styles for
6  # backwards compatibility). Please don't change it unless you know what
7  # you're doing.
8  Vagrant.configure("2") do |config|
9    # The most common configuration options are documented and commented below.
10   # For a complete reference, please see the online documentation at
11   # https://docs.vagrantup.com.
12
13   # Every Vagrant development environment requires a box. You can search for
14   # boxes at https://vagrantcloud.com/search.
15   config.vm.box = "ubuntu/trusty64"
16
17   # Disable automatic box update checking. If you disable this, then
18   # boxes will only be checked for updates when the user runs
19   # `vagrant box outdated`. This is not recommended.
20   # config.vm.box_check_update = false
21
22   # Create a forwarded port mapping which allows access to a specific port
23   # within the machine from a port on the host machine. In the example below,
24   # accessing "localhost:8080" will access port 80 on the guest machine.
25   # NOTE: This will enable public access to the opened port
26   # config.vm.network "forwarded port", guest: 80, host: 8080
```

5. Launching and Managing the VM:

In the terminal, start the VM using the following command:

vagrant up

```
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Box 'ubuntu/trusty64' could not be found. Attempting to find and install...
==> default: Box Provider: virtualbox
==> default: Box Version: >= 0
==> default: Loading metadata for box 'ubuntu/trusty64'
==> default: URL: https://vagrantcloud.com/api/v2/vagrant/ubuntu/trusty64
==> default: Adding box 'ubuntu/trusty64' (v20191107.0.0) for provider: virtualbox
==> default: Downloading: https://vagrantcloud.com/ubuntu/boxes/trusty64/versions/20191107.0.0/providers/virtualbox/unknown/vagrant.box
Download redirected to host: cloud-images.ubuntu.com
==> default: Successfully added box 'ubuntu/trusty64' (v20191107.0.0) for 'virtualbox'!
==> default: Importing base box 'ubuntu/trusty64'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'ubuntu/trusty64' version '20191107.0.0' is up to date...
==> default: There was a problem while downloading the metadata for your box
==> default: to check for updates. This is not an error, since it is usually due
==> default: to temporary network problems. This is just a warning. The problem
==> default: encountered was:
==> default: The requested URL returned error: 504
==> default:
==> default: If you want to check for box updates, verify your network connection
==> default: is valid and try again.
==> default: Setting the name of the VM: vagrant_lab_default_1724350684581_97716
==> 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:
==> 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: Removing insecure key from the guest if it's present...
```



6. SSH into the VM

Use the following command to connect into running VM using SSH

vagrant ssh

```
anshi@HP MINGW64 /d/Academics/Docker/vagrant_lab
$ vagrant ssh
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

vagrant@vagrant-ubuntu-trusty-64:~$ ls -a
.  ..  .bash_logout  .bashrc  .cache  .profile  .ssh
vagrant@vagrant-ubuntu-trusty-64:~$
```

Exit the SSH session by typing exit.

7. Stopping VM

Stop the VM with the following command

vagrant halt

```
anshi@HP MINGW64 /d/Academics/Docker/vagrant_lab
$ vagrant halt
==> default: Attempting graceful shutdown of VM...

anshi@HP MINGW64 /d/Academics/Docker/vagrant_lab
$
```

