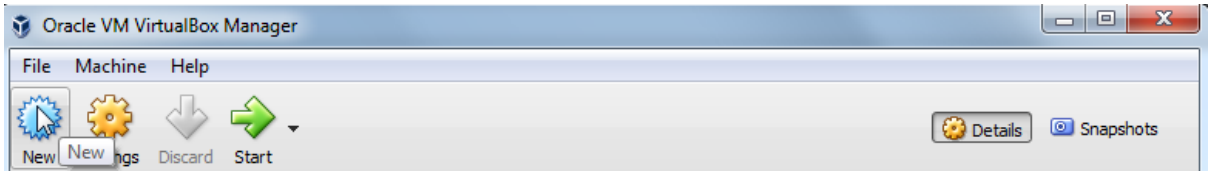
Linux

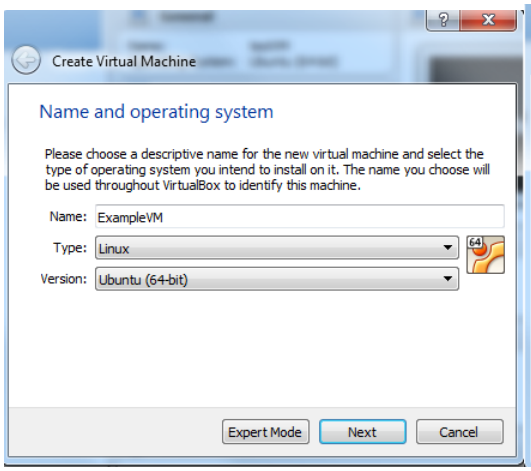
Task1: Your first Virtual Machine

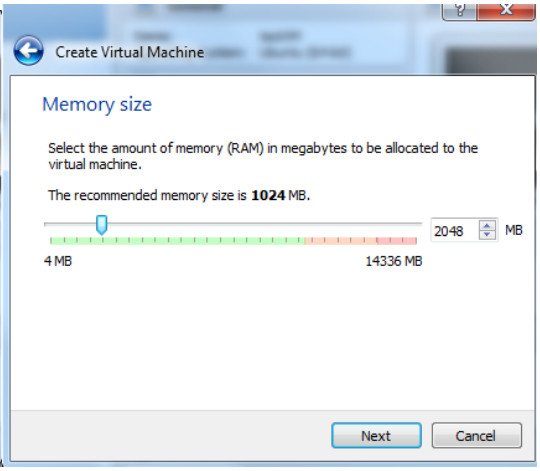
Download virtualbox at https://www.virtualbox.org/wiki/Downloads.

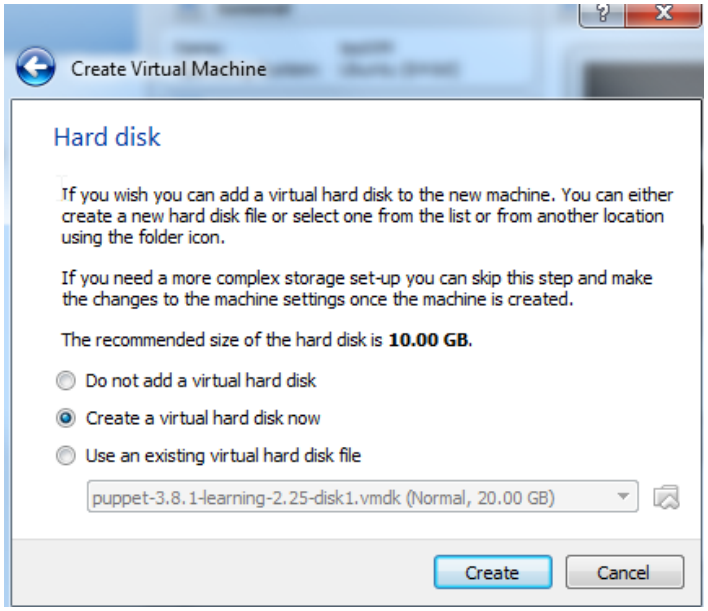


Create a new VM, Choose the OS that you have on version. If not present, choose others 64/32 bits.

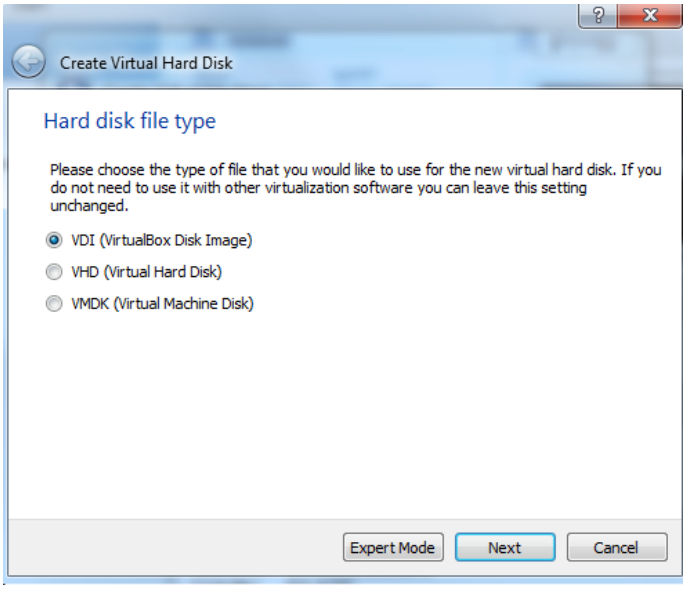
Max recommended is half of available RAM.

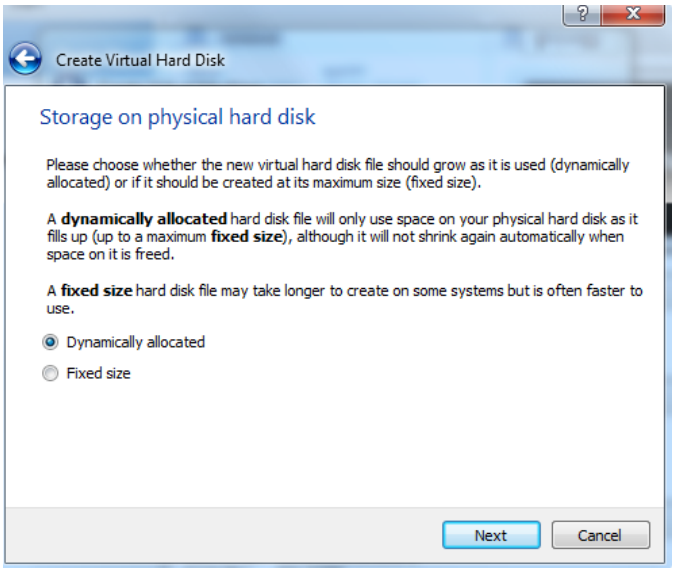


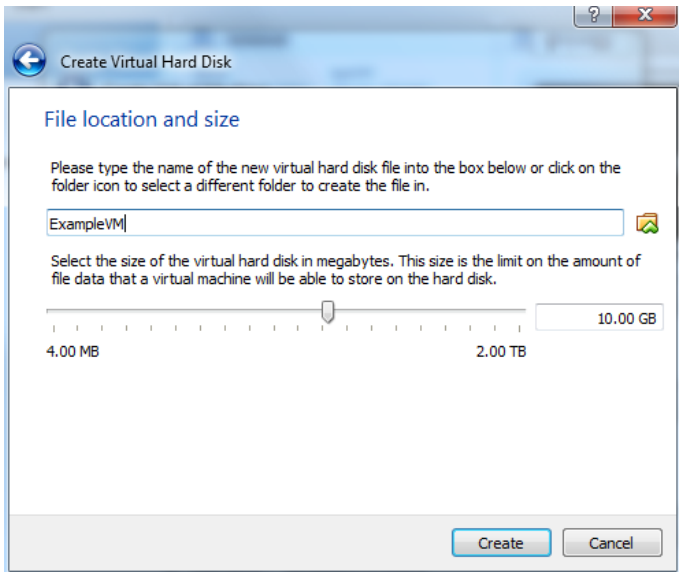




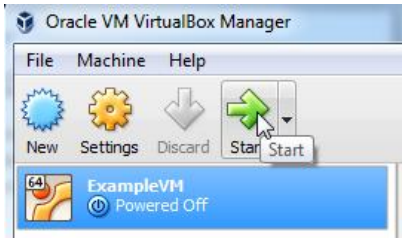
Create a virtual hard disk


Create Virtual Hard Disk
Hard disk file type
Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.
VDI (VirtualBox Disk Image)
VHD (Virtual Hard Disk)
VMDK (Virtual Machine Disk)
Expert Mode
Next
Cancel

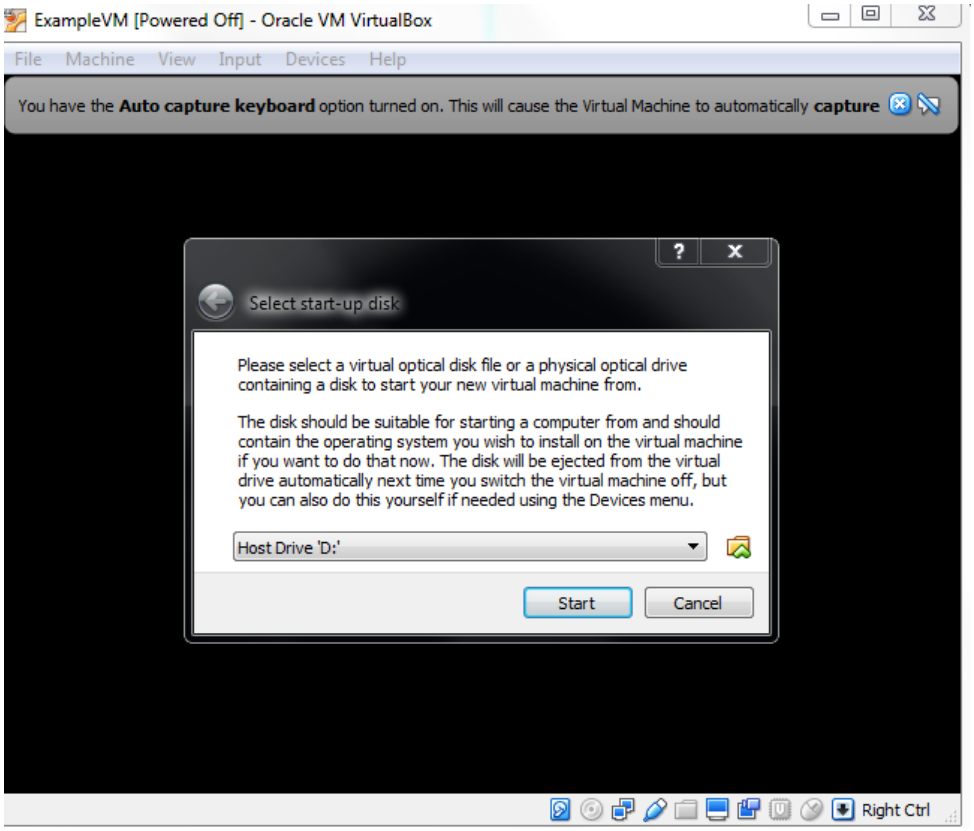

Create Virtual Hard Disk
Storage on physical hard disk
Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).
A dynamically allocated hard disk file will only use space on your physical hard disk as it fills up (up to a maximum fixed size), although it will not shrink again automatically when space on it is freed.
A fixed size hard disk file may take longer to create on some systems but is often faster to use.
Dynamically allocated
Fixed size
Next
Cancel


Create Virtual Hard Disk
File location and size
Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.
ExampleVM
Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk.
10.00 GB
4.00 MB
2.00 TB
Create
Cancel

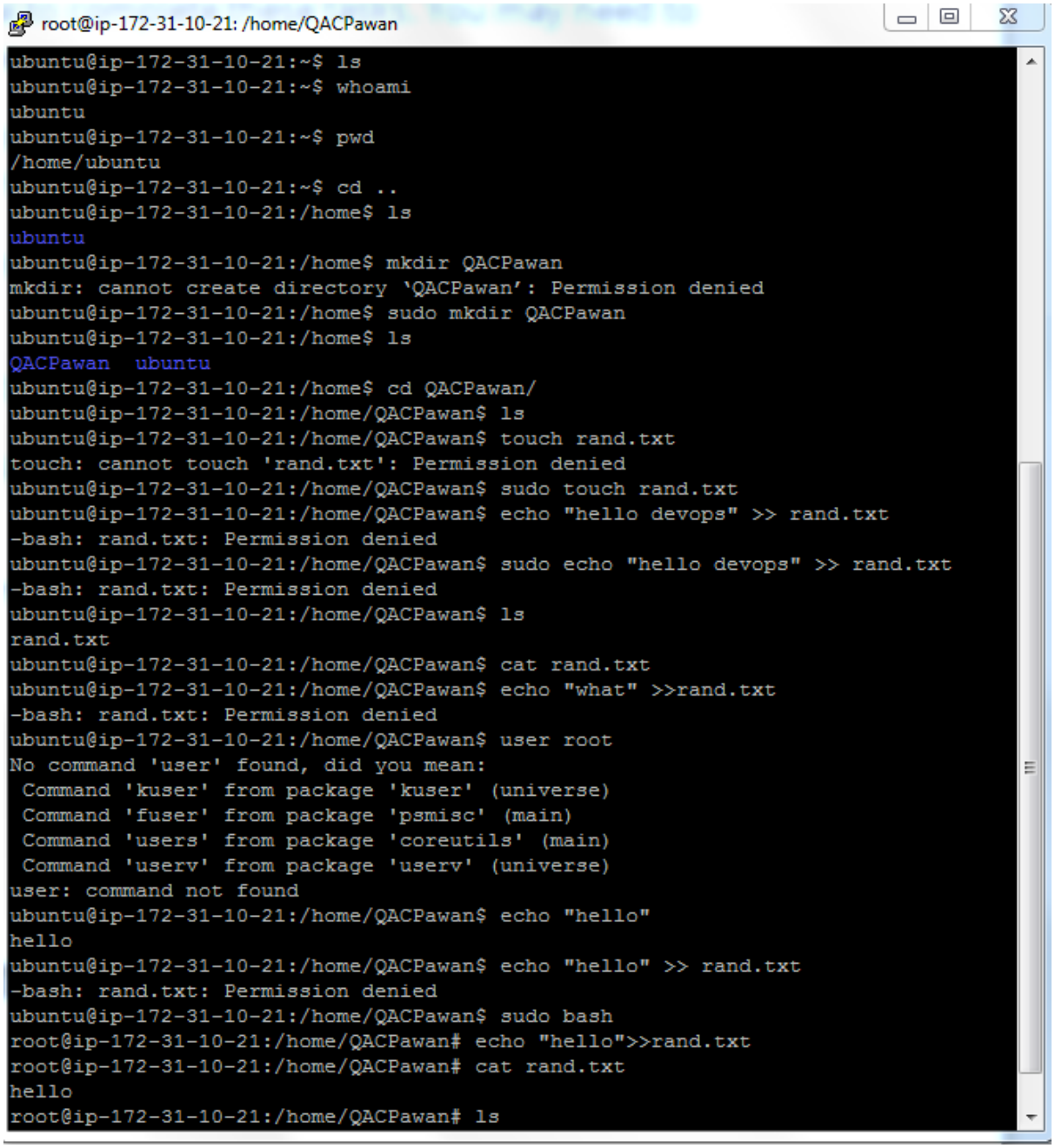
Start the VM



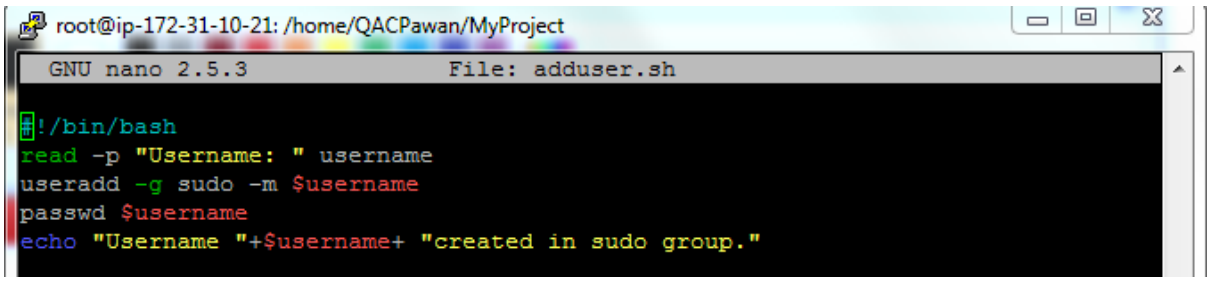
Select the ISO file of your ubuntu machine and install it.



Task 2: Terminal Exploration



Task 3: Creating a script file



```
 GNU nano 2.5.3            File: task1challenge.sh

#/bin/bash
date
w
uptime
```

Task 4: Configuring the Linux environment

apt-get update

apt-get install maven

(Maven installed itself and java as well)

```
Processing triggers for libc-bin (2.23-0ubuntu7) ...
Processing triggers for systemd (229-4ubuntu16) ...
Processing triggers for ureadahead (0.100.0-19) ...
Processing triggers for ca-certificates (20160104ubuntu1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...

done.
done.
root@ip-172-31-10-21:/home/QACPawan/MyProject# java -version
openjdk version "1.8.0_131"
OpenJDK Runtime Environment (build 1.8.0_131-8u131-b11-0ubuntu1.16.04.2-b11)
OpenJDK 64-Bit Server VM (build 25.131-b11, mixed mode)
root@ip-172-31-10-21:/home/QACPawan/MyProject# mvn -v
Warning: JAVA_HOME environment variable is not set.
Apache Maven 3.3.9
Maven home: /usr/share/maven
Java version: 1.8.0_131, vendor: Oracle Corporation
Java home: /usr/lib/jvm/java-8-openjdk-amd64/jre
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "4.4.0-1013-aws", arch: "amd64", family: "unix"
root@ip-172-31-10-21:/home/QACPawan/MyProject#
```

Task 5: Using Iptables

Start iptables:

sudo ufw enable

Stop iptables:

sudo ufw disable

Show status:

sudo ufw status

```
root@ip-172-31-10-21:/home/QACPawan/MyProject# ufw status
Status: active
root@ip-172-31-10-21:/home/QACPawan/MyProject# ufw disable
Firewall stopped and disabled on system startup
root@ip-172-31-10-21:/home/QACPawan/MyProject# ufw status
Status: inactive
root@ip-172-31-10-21:/home/QACPawan/MyProject# ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
root@ip-172-31-10-21:/home/QACPawan/MyProject#
```

Allowing ftp at port 21 rule:

```
root@ip-172-31-10-21:/home/QACPawan/MyProject# iptables -A INPUT -p tcp --dport ftp -j ACCEPT
root@ip-172-31-10-21:/home/QACPawan/MyProject# iptables -L -v -n
Chain INPUT (policy DROP 0 packets, 0 bytes)
 pkts bytes target     prot opt in     out     source               destination
  421 34971 ufw-before-logging-input  all  --  *      *       0.0.0.0/0            0.0.0.0/0
  421 34971 ufw-before-input  all  --  *      *       0.0.0.0/0            0.0.0.0/0
   40  2944 ufw-after-input  all  --  *      *       0.0.0.0/0            0.0.0.0/0
   40  2944 ufw-after-logging-input  all  --  *      *       0.0.0.0/0            0.0.0.0/0
   40  2944 ufw-reject-input  all  --  *      *       0.0.0.0/0            0.0.0.0/0
   40  2944 ufw-track-input  all  --  *      *       0.0.0.0/0            0.0.0.0/0
    0     0 ACCEPT     tcp  --  *      *       0.0.0.0/0            0.0.0.0/0           tcp dpt:21
```

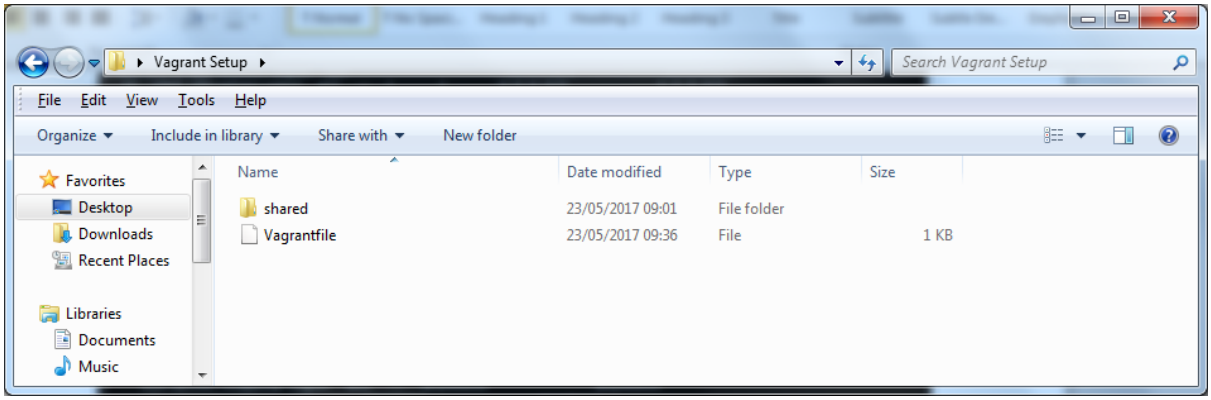
View rule by input chain and by line number, delete by input chain+linenumber

```
Chain ufw-user-output (1 references)
num  target     prot opt source               destination
root@ip-172-31-10-21:/home/QACPawan/MyProject# iptables -L INPUT --line-number
Chain INPUT (policy DROP)
num  target     prot opt source               destination
1    ufw-before-logging-input  all  --  anywhere             anywhere
2    ufw-before-input  all  --  anywhere             anywhere
3    ufw-after-input  all  --  anywhere             anywhere
4    ufw-after-logging-input  all  --  anywhere             anywhere
5    ufw-reject-input  all  --  anywhere             anywhere
6    ufw-track-input  all  --  anywhere             anywhere
7    ACCEPT     tcp  --  anywhere             anywhere             tcp dpt:ftp
root@ip-172-31-10-21:/home/QACPawan/MyProject# iptables -D INPUT 7
root@ip-172-31-10-21:/home/QACPawan/MyProject# iptables -L INPUT --line-number
Chain INPUT (policy DROP)
num  target     prot opt source               destination
1    ufw-before-logging-input  all  --  anywhere             anywhere
2    ufw-before-input  all  --  anywhere             anywhere
3    ufw-after-input  all  --  anywhere             anywhere
4    ufw-after-logging-input  all  --  anywhere             anywhere
5    ufw-reject-input  all  --  anywhere             anywhere
6    ufw-track-input  all  --  anywhere             anywhere
root@ip-172-31-10-21:/home/QACPawan/MyProject#
```

Task 6: Vagrant scripting

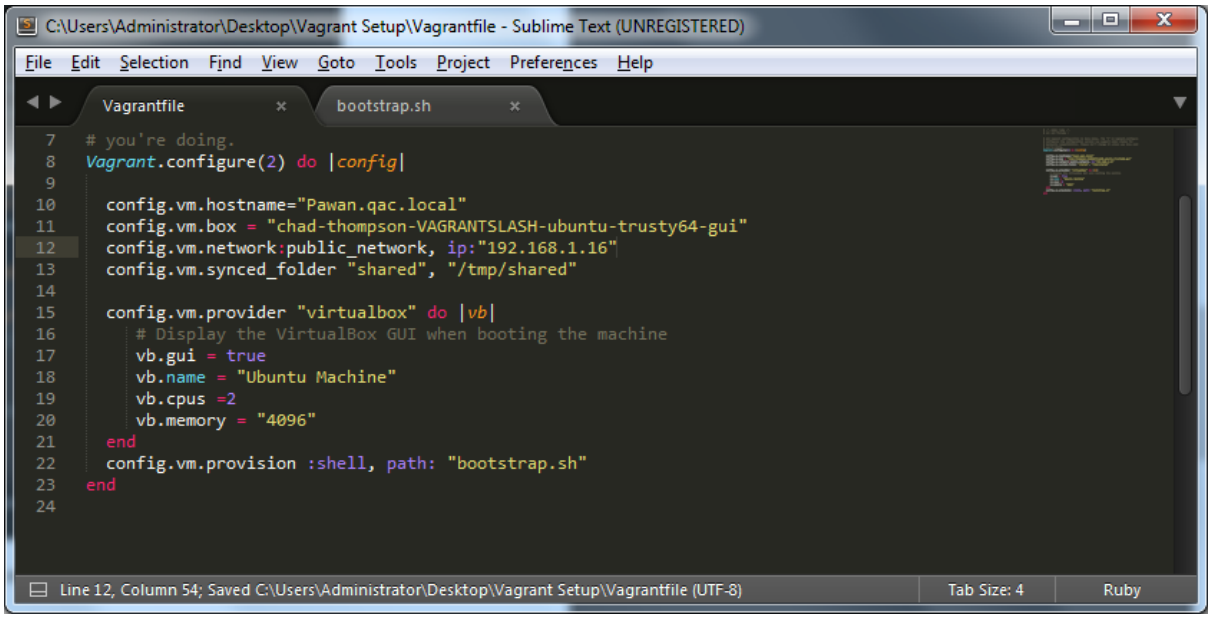
Create directory “Vagrant Setup” - in here open Git bash and use the command, *vagrant init*, to initialise a new vagrant repository. This should add a Vagrantfile to the directory

Create a shared folder to use with VM.

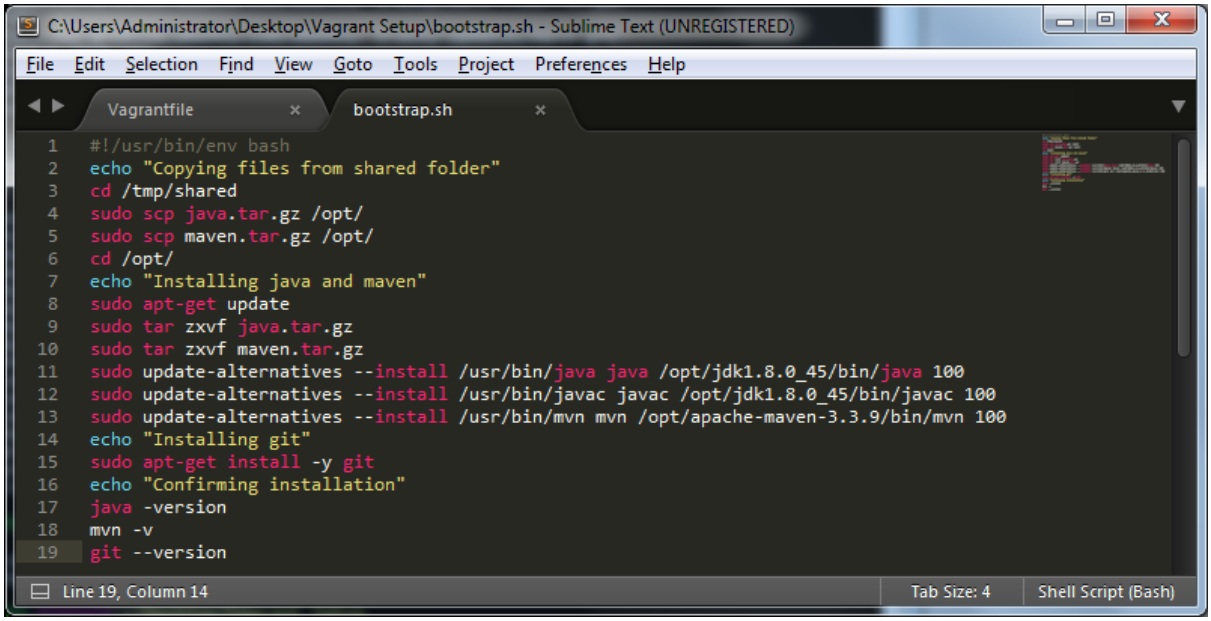


For single VM installation

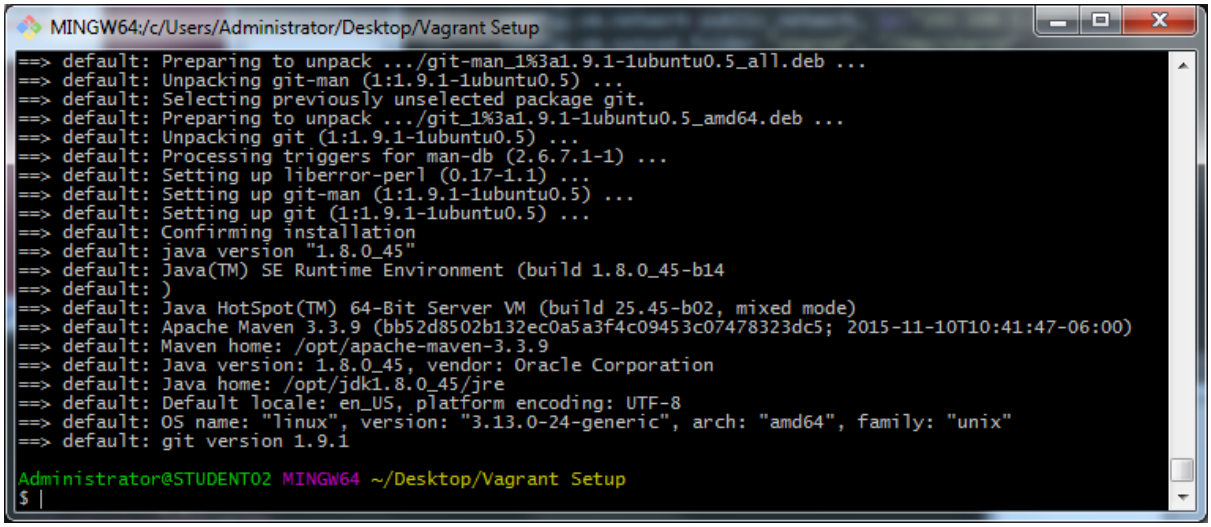
Edited vagrantfile to setup the VM with required specification.



Bash script used to install JAVA, Maven and Git on VM.



Use “vagrant up” on the folder with vagrantfile to create VM and run bash script.



For multiple VM installation

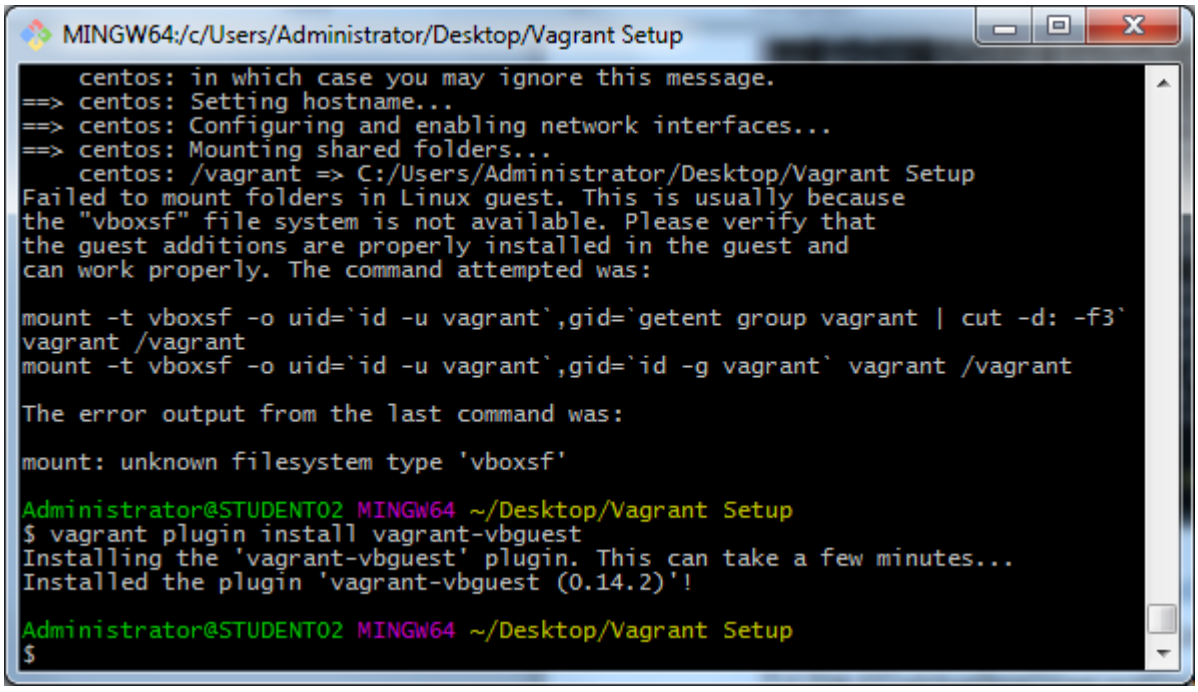
For CentOS installation, edit C:\Users\Administrator\.vagrant.d\boxes\centos-VAGRANTSLASH-7\1704.01\virtualbox\Vagrantfile

config.vm.synced_folder ".", "/vagrant", type: "rsync"

config.vm.synced_folder ".", "/vagrant", type: "virtualbox"

Rsync isn’t installed.

Run **vagrant plugin install vagrant-vbguest** on git bash as the shared folder encounters problem with centOS due to mismatch of GuestAdditions between centOS and virtualbox.



Vagrantfile for multiple VM

```
Vagrant.configure(2) do |config|
  config.vm.define "ubuntu" do |ubuntu|
      ubuntu.vm.hostname="Pawan.qac.local"
      ubuntu.vm.box = "chad-thompson-VAGRANTSLASH-ubuntu-trusty64-gui"
      ubuntu.vm.network:public_network, ip:"192.168.1.17"
      ubuntu.vm.synced_folder "shared", "/tmp/shared"

      ubuntu.vm.provider "virtualbox" do |vb|
         # Display the VirtualBox GUI when booting the machine
         vb.gui = true
         vb.name = "Ubuntu Machine"
         vb.cpus =2
         vb.memory = "4096"
      end
  end
  config.vm.define "centos" do |centos|
      centos.vm.hostname="Pawan1.qac.local"
      centos.vm.box = "centos-VAGRANTSLASH-7"
      centos.vm.network:public_network
      centos.vm.synced_folder "shared", "/tmp/shared"

      centos.vm.provider "virtualbox" do |vb|
         # Display the VirtualBox GUI when booting the machine
         vb.gui = true
         vb.name = "CentOS"
         vb.cpus =2
         vb.memory = "4096"
      end
  end
  config.vm.provision :shell, path: "bootstrap.sh"
end
```

Line 38, Column 4; Saved C:\Users\Administrator\Desktop\Vagrant Setup\Vagrantfile (UTF-8) | Tab Size: 4 | Ruby

Script file for multiple VM

C:\Users\Administrator\Desktop\Vagrant Setup\bootstrap.sh - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

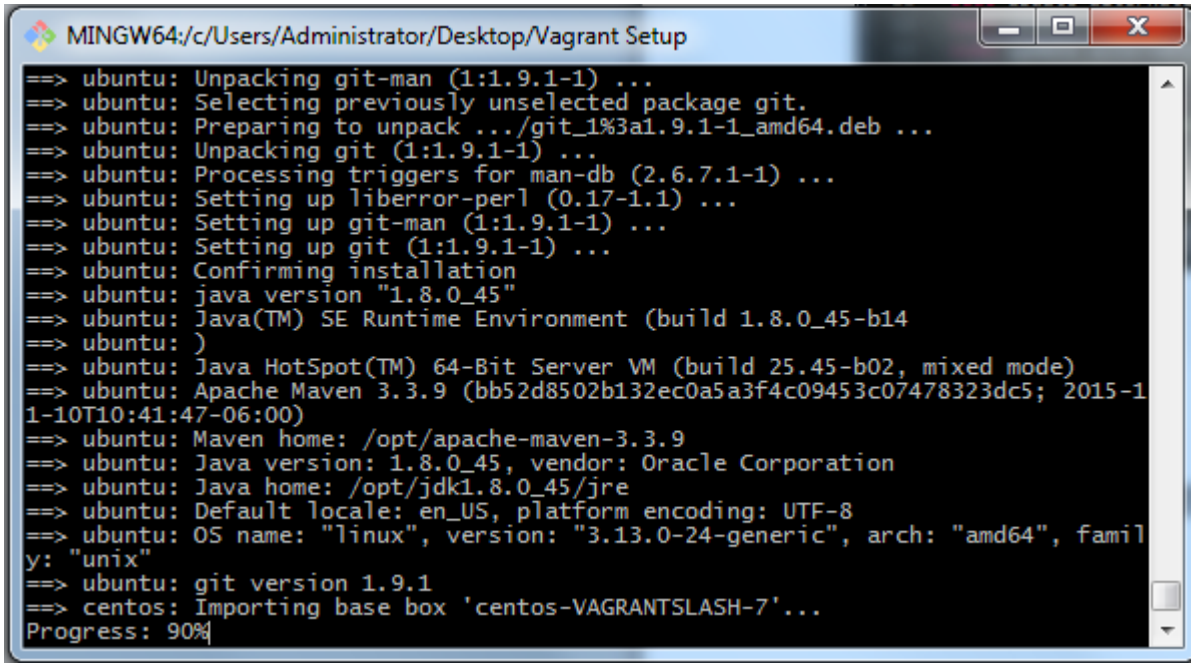
Vagrantfile — Desktop\Vagrant Setup | Vagrantfile — .vagrant.d\...\virtualbox | bootstrap.sh

```
#!/usr/bin/env bash
echo "Copying files from shared folder"
cd /tmp/shared
sudo scp java.tar.gz /opt/
sudo scp maven.tar.gz /opt/
cd /opt/
echo "Installing java and maven"
if [ "$(. /etc/os-release; echo $NAME)" = "Ubuntu" ]; then
  sudo apt-get install updates
else
  sudo yum update
fi
sudo tar zxvf java.tar.gz
sudo tar zxvf maven.tar.gz
sudo update-alternatives --install /usr/bin/java java /opt/jdk1.8.0_45/bin/java 100
sudo update-alternatives --install /usr/bin/javac javac /opt/jdk1.8.0_45/bin/javac 100
sudo update-alternatives --install /usr/bin/mvn mvn /opt/apache-maven-3.3.9/bin/mvn 100
echo "Installing git"
if [ "$(. /etc/os-release; echo $NAME)" = "Ubuntu" ]; then
    sudo apt-get install -y git
else
  sudo yum install -y git
fi
echo "Confirming installation"
java -version
mvn -v
git --version
```

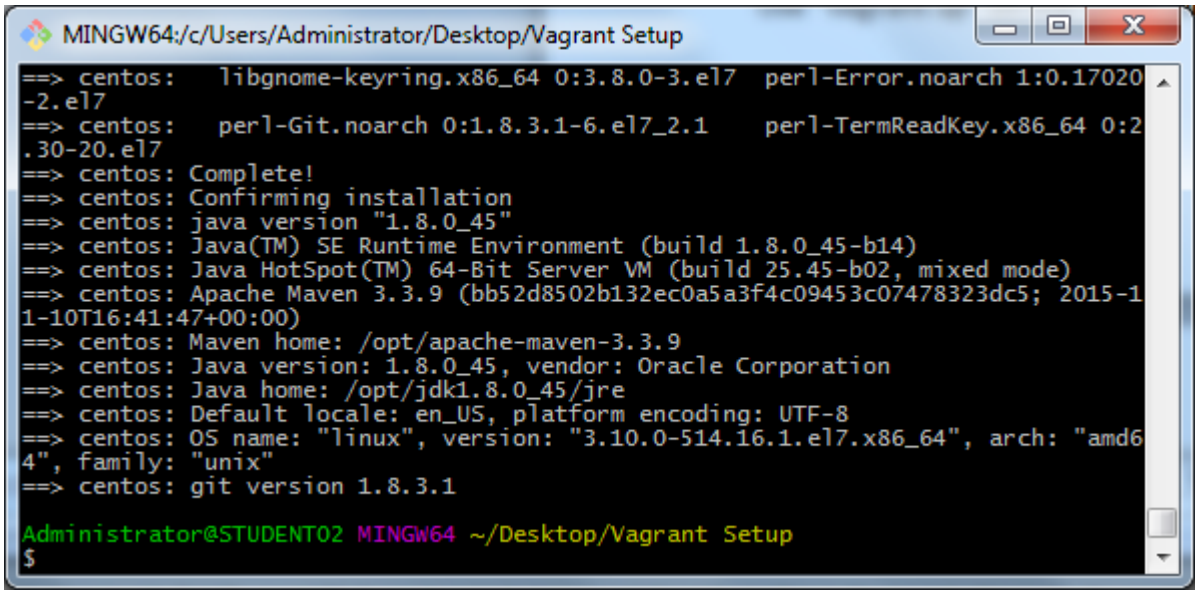
Line 22, Column 26 | Tab Size: 4 | Shell Script (Bash)

Use “vagrant up” on the folder with vagrantfile to create VM and run bash script.

Ubuntu installed with JAVA, MAVEN, and GIT.

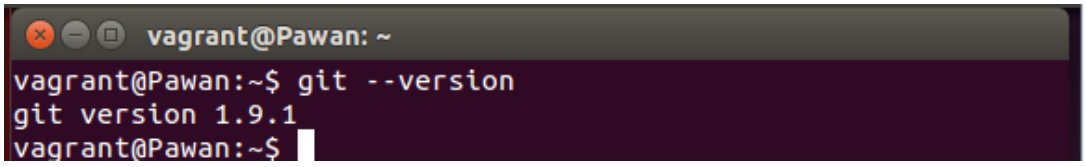


CentOS installed with JAVA, MAVEN, and GIT.

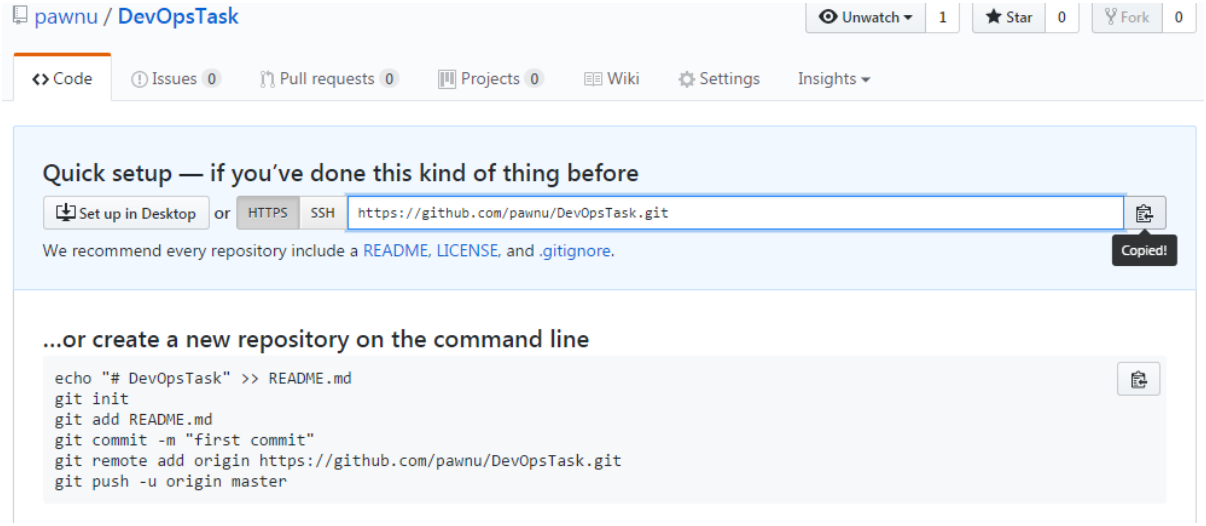


Task 7: Repository Management

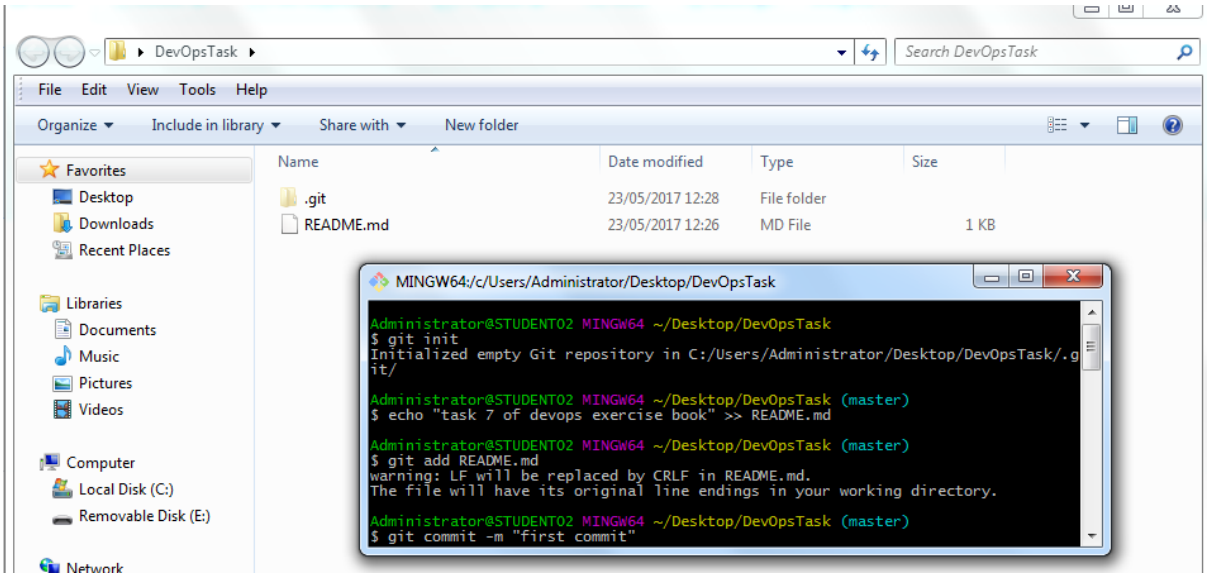
Confirmed Git is installed in VM



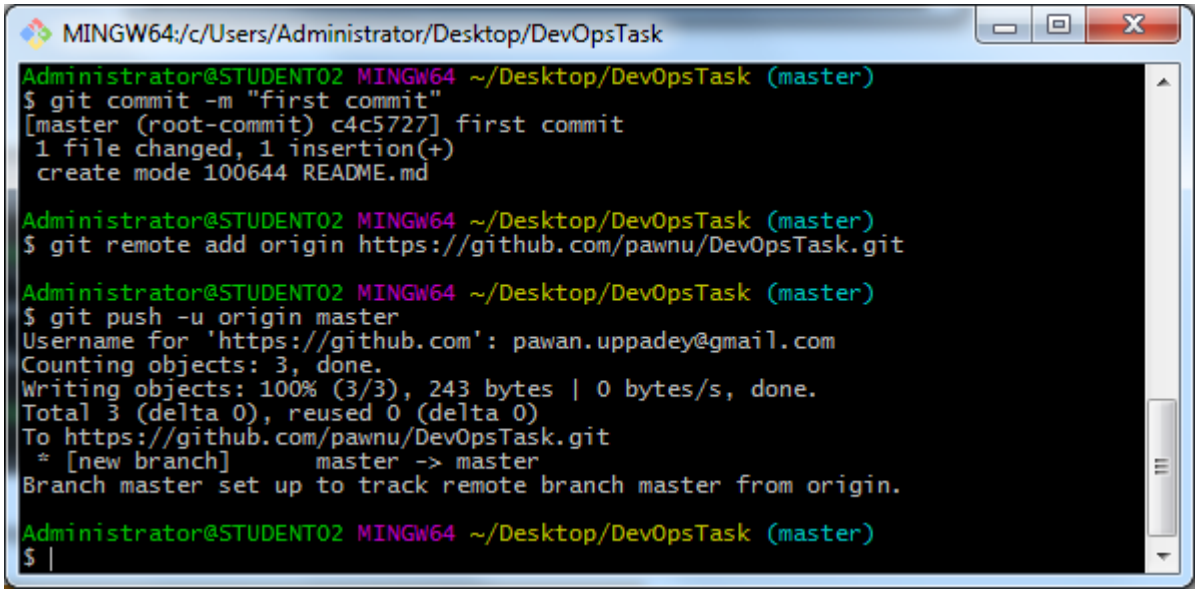
On Windows host machine, create a repository on github.



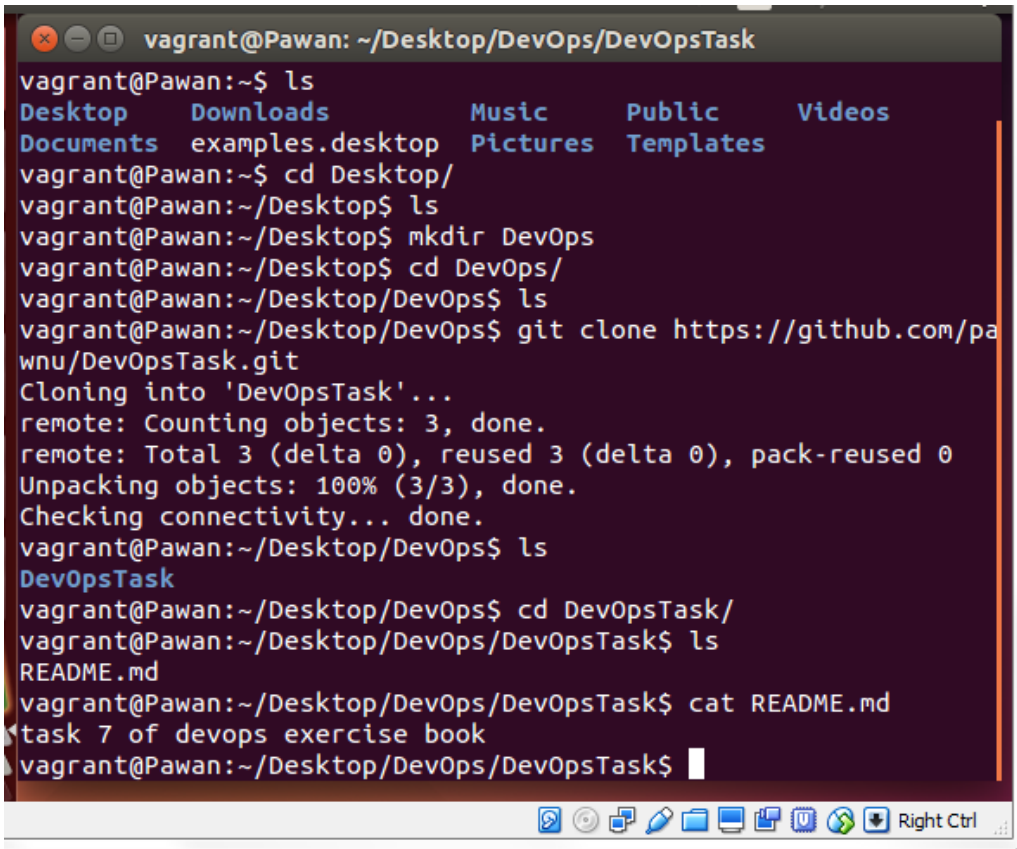
On host windows machine, create a directory for git and use "git init" command on that folder. Create a file, add and commit it.



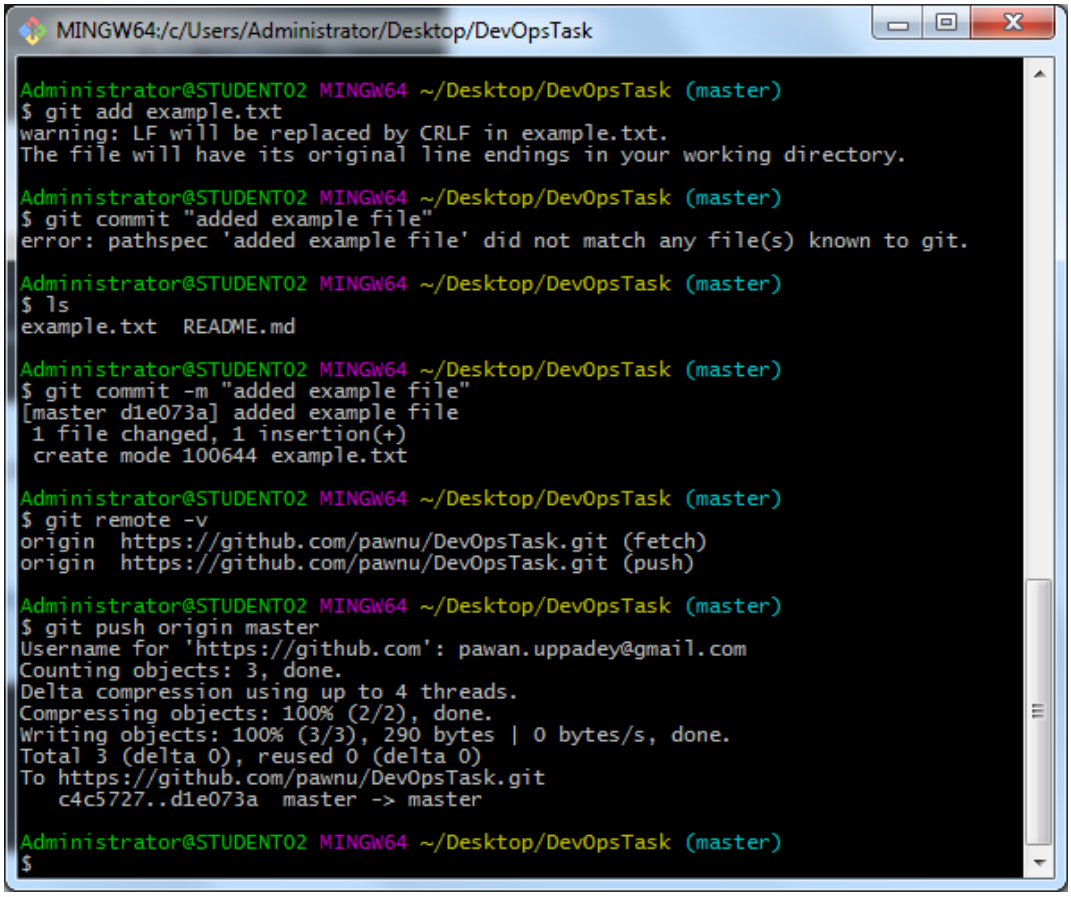
Add the commit to your repository on github with HTTPS link and push the changes.



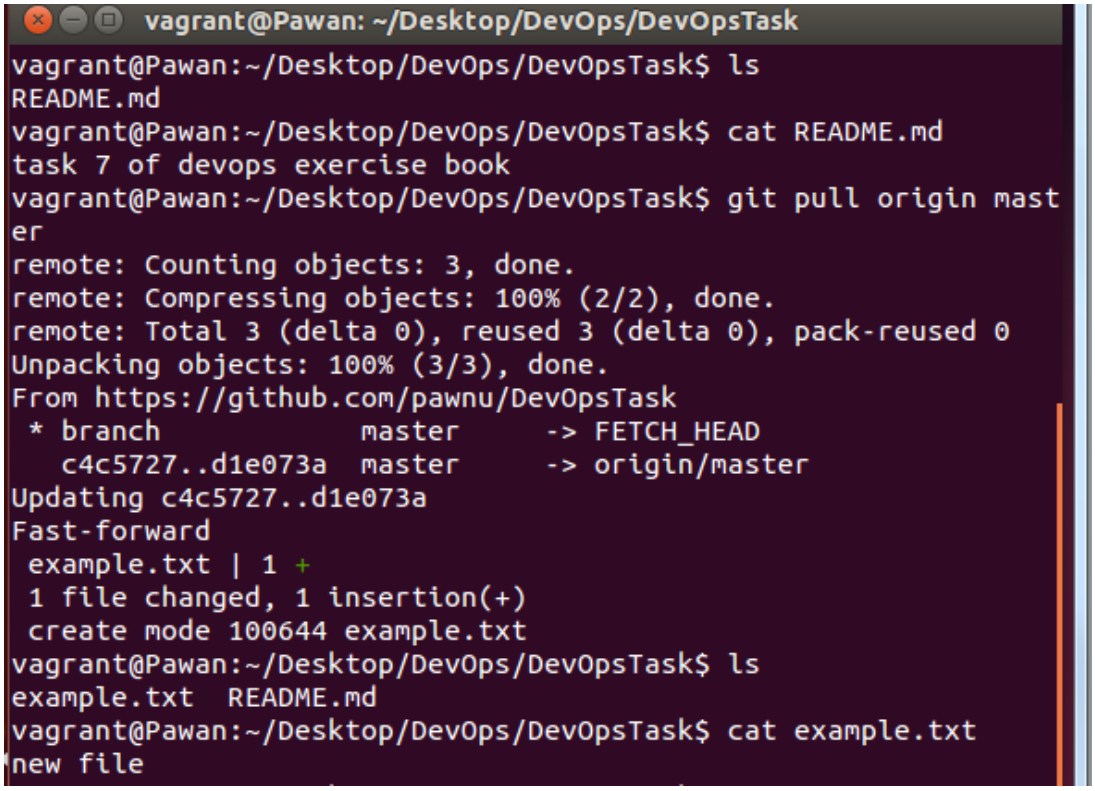
On Ubuntu guest machine, clone and confirm the file created earlier is present.



Create a new file on Windows host machine and push change to repository.



Confirm the file present on Ubuntu guest machine.



Make change to a file on Ubuntu and push to repository

```
vagrant@Pawan:~/Desktop/DevOps/DevOpsTask$ git add example.txt
vagrant@Pawan:~/Desktop/DevOps/DevOpsTask$ git commit -m "made
change to example text file"
[master 179bba0] made change to example text file
 Committer: Vagrant <vagrant@Pawan.qac.local>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accur
ate.
You can suppress this message by setting them explicitly:

    git config --global user.name "Your Name"
    git config --global user.email you@example.com

After doing this, you may fix the identity used for this commit
 with:

    git commit --amend --reset-author

 1 file changed, 1 insertion(+)
```

```
Counting objects: 5, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 339 bytes | 0 bytes/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/pawnu/DevOpsTask.git
   d1e073a..179bba0  master -> master
vagrant@Pawan:~/Desktop/DevOps/DevOpsTask$
```

Confirm changes on Windows host machine side