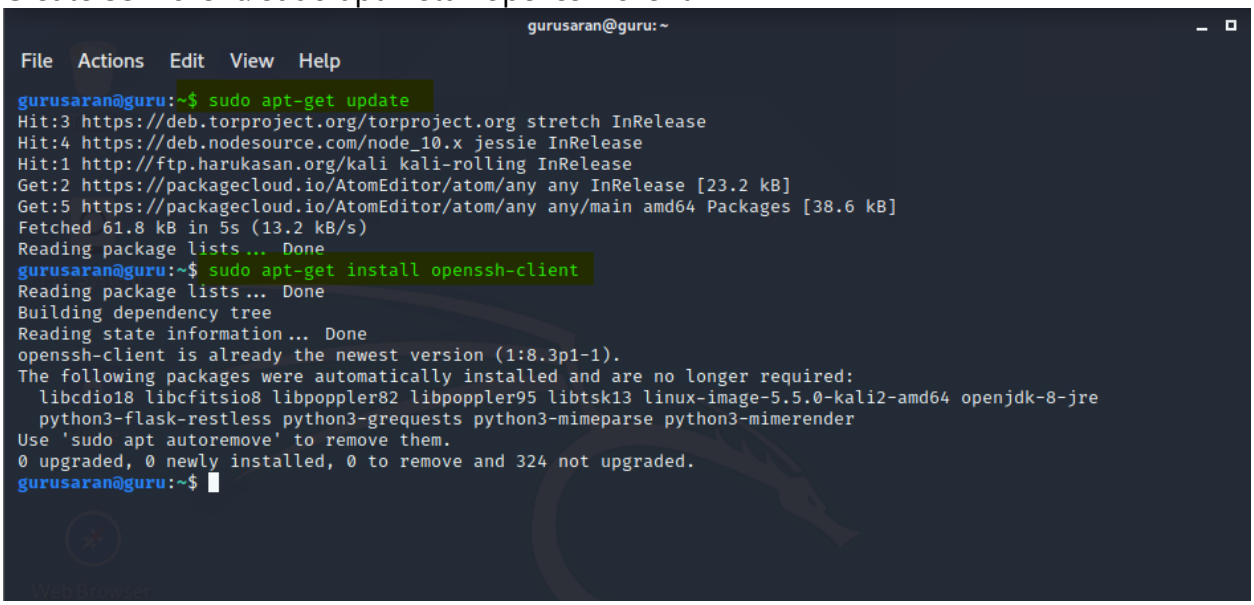
Assignment-4

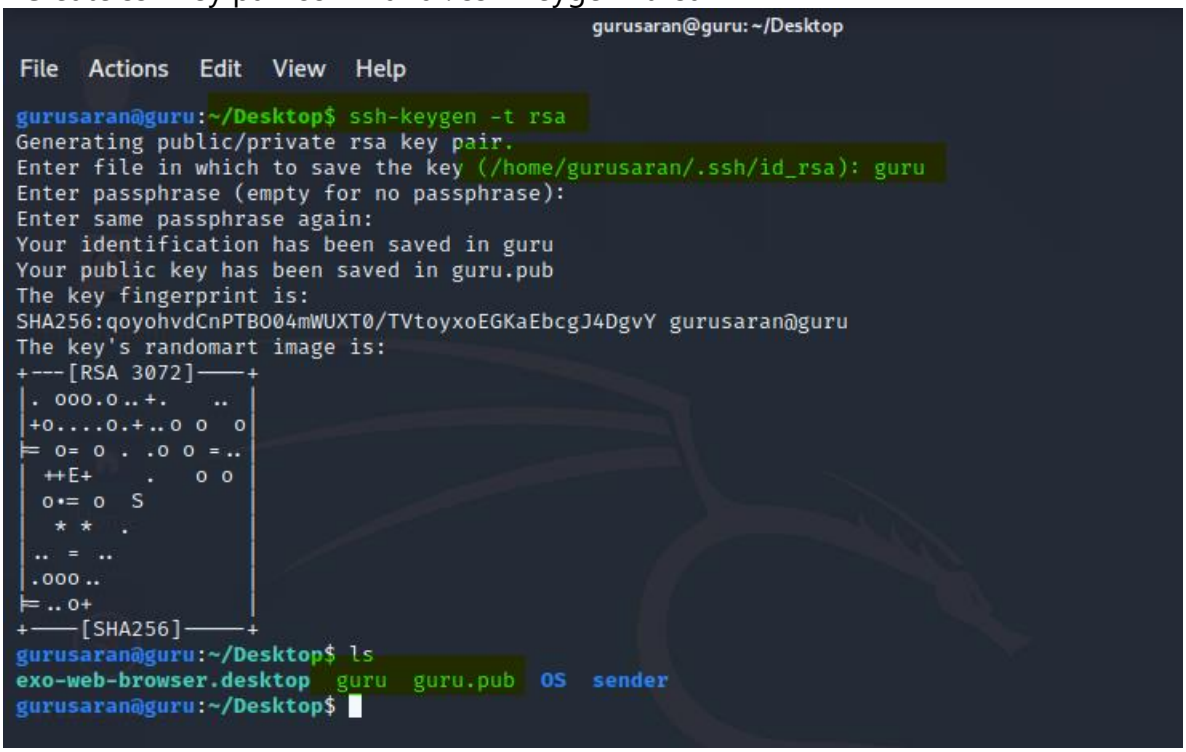
1. **Install SSH client on ubuntu machine**

Create SSH client: sudo apt install openssh-client



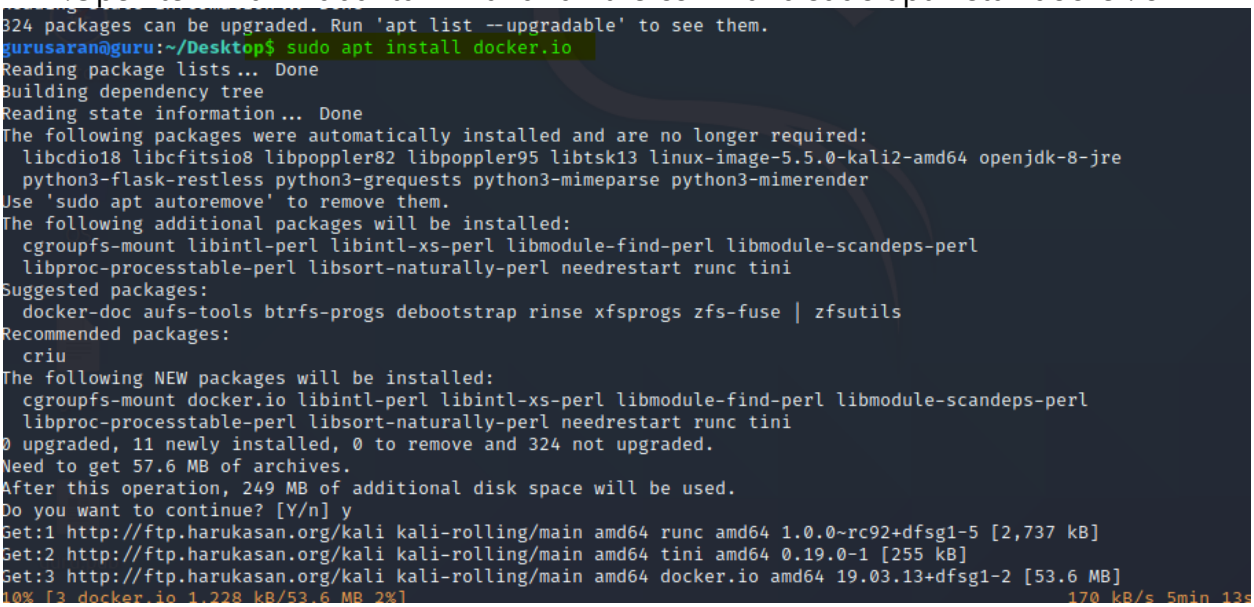
2. Generate a ssh RSA keypair. Find out where they are stored on the filesystem. What is encrypted using the passphrase you provided the public key or private key?

Create ssh key pair command : ssh-keygen -t rsa

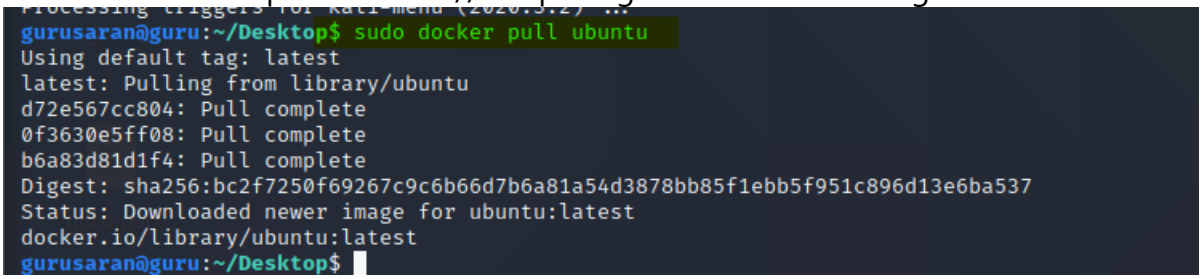


3. Install openssh server on ubuntu docker container [if you have both linux host and VM, you can install it on linux VM]

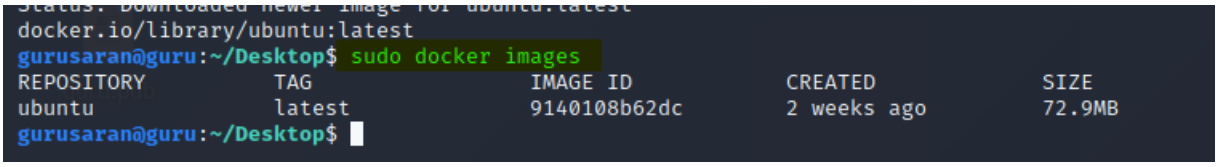
1.Open terminal in ubuntu VM and run the command sudo apt install docker.io



2 . sudo docker pull ubuntu // for pulling ubuntu docker image



3.sudo docker images // for listing the images downloaded



4. sudo docker run -it -d ubuntu // run the image

```
     NAMES
gurusaran@guru:~/Desktop$ sudo docker run -it -d ubuntu
6d860c1c94cf45cc73dd06d590a248b311c95d494c1f1680331fa7134b522858
gurusaran@guru:~/Desktop$ sudo docker container ls
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS
     NAMES
6d860c1c94cf        ubuntu              "/bin/bash"         13 seconds ago      Up 9 seconds
     hardcore_pare
```

5.sudo docker start -ai containerId // starting the container

```
gurusaran@guru:~/Desktop$ sudo docker container ls
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORT
     NAMES
6d860c1c94cf        ubuntu              "/bin/bash"         13 seconds ago      Up 9 seconds
     hardcore_pare
gurusaran@guru:~/Desktop$ sudo docker start -ai f^C
gurusaran@guru:~/Desktop$ sudo docker start -ai 6d860c1c94cf
root@6d860c1c94cf:/# apt update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [406 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [75.9 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [1169 B]
Get:10 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [626 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:12 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [21.6 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [88.7 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [832 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [745 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [4277 B]
Fetched 16.2 MB in 1min 14s (220 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
4 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

6. apt update

```
gurusaran@guru:~/Desktop$ sudo docker start -ai f^C
gurusaran@guru:~/Desktop$ sudo docker start -ai 6d860c1c94cf
root@6d860c1c94cf:/# apt update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [406 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [75.9 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [1169 B]
Get:10 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [626 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:12 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [21.6 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [88.7 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [832 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [745 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [4277 B]
Fetched 16.2 MB in 1min 14s (220 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
4 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@6d860c1c94cf:/#
```

7. useradd -rm -d /home/ubuntu -s /bin/bash -g root -G sudo -u 1000 test // create a user called test and add it to the sudo group

```
Reading state information... Done
4 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@6d860c1c94cf:/# useradd -rm -d /home/ubuntu -s /bin/bash -g root -G sudo -u 1000 test
root@6d860c1c94cf:/# echo 'test:test' | chpasswd
root@6d860c1c94cf:/# apt install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ca-certificates dbus distro-info-data dmsetup file gir1.2-glib-2.0 krb5-locales libapparmor1 libargon2-1
  libbsd0 libcap2 libcbor0.6 libcryptsetup12 libdbus-1-3 libdevmapper1.02.1 libedit2 libexpat1 libfido2-1
  libgirepository-1.0-1 libglib2.0-0 libglib2.0-data libgssapi-krb5-2 libicu66 libip4tc2 libjson-c4 libk5crypto3
  libkeyutils1 libkmod2 libkrb5-3 libkrb5support0 libmagic-mgc libmagic1 libmpdec2 libnss-systemd libpam-systemd
  libpsl5 libpython3-stdlib libpython3.8-minimal libpython3.8-stdlib libreadline8 libsqlite3-0 libssl1.1 libwrap0
  libx11-6 libx11-data libxau6 libxcb1 libxdmcp6 libxext6 libxml2 libxmuu1 lsb-release mime-support ncurses-term
  networkd-dispatcher openssh-client openssh-sftp-server openssl publicsuffix python3 python3-certifi
  python3-chardet python3-dbus python3-distro python3-gi python3-idna python3-minimal python3-pkg-resources
  python3-requests python3-six python3-urllib3 python3.8 python3.8-minimal readline-common shared-mime-info
  ssh-import-id systemd systemd-sysv systemd-timesyncd tzdata ucf wget xauth xdg-user-dirs xz-utils
```

8. echo 'test:test' | chpasswd //set the password for the user test to test

```
Building dependency tree
Reading state information... Done
4 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@6d860c1c94cf:/# useradd -rm -d /home/ubuntu -s /bin/bash -g root -G sudo -u 1000 test
root@6d860c1c94cf:/# echo 'test:test' | chpasswd
root@6d860c1c94cf:/# apt install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ca-certificates dbus distro-info-data dmsetup file gir1.2-glib-2.0 krb5-locales libapparmor1 libargon2-1
  libbsd0 libcap2 libcbor0.6 libcryptsetup12 libdbus-1-3 libdevmapper1.02.1 libedit2 libexpat1 libfido2-1
  libgirepository-1.0-1 libglib2.0-0 libglib2.0-data libgssapi-krb5-2 libicu66 libip4tc2 libjson-c4 libk5crypto3
  libkeyutils1 libkmod2 libkrb5-3 libkrb5support0 libmagic-mgc libmagic1 libmpdec2 libnss-systemd libpam-systemd
  libpsl5 libpython3-stdlib libpython3.8-minimal libpython3.8-stdlib libreadline8 libsqlite3-0 libssl1.1 libwrap0
  libx11-6 libx11-data libxau6 libxcb1 libxdmcp6 libxext6 libxml2 libxmuu1 lsb-release mime-support ncurses-term
  networkd-dispatcher openssh-client openssh-sftp-server openssl publicsuffix python3 python3-certifi
  python3-chardet python3-dbus python3-distro python3-gi python3-idna python3-minimal python3-pkg-resources
```

4. Start ssh service

9. apt install openssh-server // install openssh server

```
root@6d860c1c94cf:/# useradd -rm -d /home/ubuntu -s /bin/bash -g root -G sudo -u 1000 test
root@6d860c1c94cf:/# echo 'test:test' | chpasswd
root@6d860c1c94cf:/# apt install openssh-server
Reading package lists ... Done
Building dependency tree
Reading state information ... Done
The following additional packages will be installed:
  ca-certificates dbus distro-info-data dmsetup file gir1.2-glib-2.0 krb5-locales libapparmor1 libargon2-1
  libbsd0 libcap2 libcbor0.6 libcryptsetup12 libdbus-1-3 libdevmapper1.02.1 libedit2 libexpat1 libfido2-1
  libgirepository-1.0-1 libglib2.0-0 libglib2.0-data libgssapi-krb5-2 libicu66 libip4tc2 libjson-c4 libk5crypto3
  libkeyutils1 libkmod2 libkrb5-3 libkrb5support0 libmagic-mgc libmagic1 libmpdec2 libnss-systemd libpam-systemd
  libpsl5 libpython3-stdlib libpython3.8-minimal libpython3.8-stdlib libreadline8 libsqlite3-0 libssl1.1 libwrap0
  libx11-6 libx11-data libxau6 libxcb1 libxdmcp6 libxext6 libxml2 libxmuu1 lsb-release mime-support ncurses-term
  networkd-dispatcher openssh-client openssh-sftp-server openssl publicsuffix python3 python3-certifi
  python3-chardet python3-dbus python3-distro python3-gi python3-idna python3-minimal python3-pkg-resources
```

```
Configuring tzdata
------------------

Please select the geographic area in which you live. Subsequent configuration questions will narrow this down by
presenting a list of cities, representing the time zones in which they are located.

  1. Africa   3. Antarctica  5. Arctic  7. Atlantic  9. Indian    11. SystemV  13. Etc
  2. America  4. Australia   6. Asia    8. Europe    10. Pacific  12. US
Geographic area:  9

Geographic area: 9

Please select the city or region corresponding to your time zone.

  1. Antananarivo  3. Christmas  5. Comoro     7. Mahe      9. Mauritius  11. Reunion
  2. Chagos        4. Cocos      6. Kerguelen  8. Maldives  10. Mayotte
Time zone: 7


Current default time zone: 'Indian/Mahe'
Local time is now:      Sun Oct 11 10:41:00 +04 2020.
Universal Time is now:  Sun Oct 11 06:41:00 UTC 2020.
Run 'dpkg-reconfigure tzdata' if you wish to change it.

Setting up libglib2.0-data (2.64.3-1~ubuntu20.04.1) ...
Setting up libwrap0:amd64 (7.6.q-30) ...
Setting up libx11-data (2:1.6.9-2ubuntu1.1) ...
```

10. service ssh status // checking whether ssh is running or not
11. service ssh restart // restarting the ssh service

```
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d ...
done.
root@6d860c1c94cf:/# service ssh status
 * sshd is not running
root@6d860c1c94cf:/# service ssh restart
 * Restarting OpenBSD Secure Shell server sshd                                    [ OK ]
root@6d860c1c94cf:/#
```

apt install net-tools

```
root@6d860c1c94cf:/# apt install net-tools
Reading package lists ... Done
Building dependency tree
Reading state information ... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 196 kB of archives.
After this operation, 864 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-1ubuntu1 [196 kB]
Fetched 196 kB in 1s (142 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package net-tools.
(Reading database ... 12076 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20180626.aebd88e-1ubuntu1_amd64.deb ...
Unpacking net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Setting up net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
root@6d860c1c94cf:/# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.17.0.2  netmask 255.255.0.0  broadcast 172.17.255.255
        ether 02:42:ac:11:00:02  txqueuelen 0  (Ethernet)
        RX packets 16376  bytes 46305679 (46.3 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 14408  bytes 795963 (795.9 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

root@6d860c1c94cf:/#
```

5. Add your public key as an authorized key in server machine and thus login to server without providing the password.

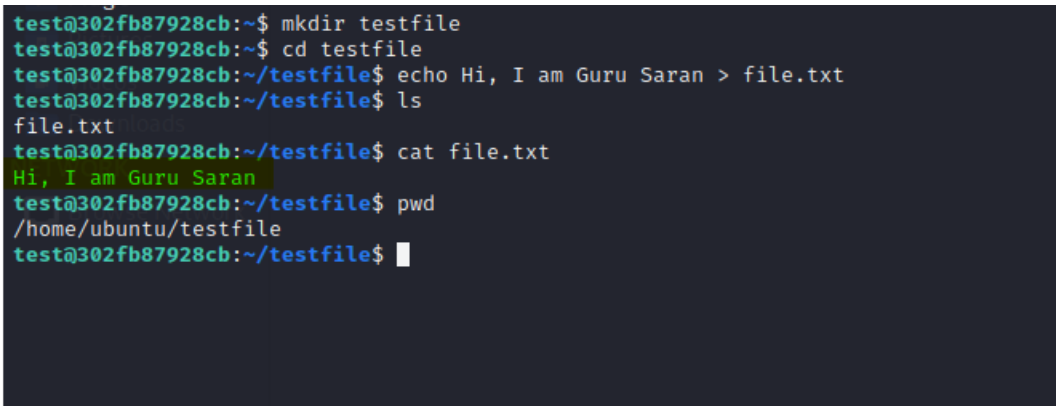
13. ssh-copy-id remoteusername@serverip //copy public key to server

```
gurusaran@guru:~$ ssh-copy-id -i ~/Desktop/guru test@172.17.0.2
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/gurusaran/Desktop/guru.pub"
The authenticity of host '172.17.0.2 (172.17.0.2)' can't be established.
ECDSA key fingerprint is SHA256:cpy7elVBK8/Zl3Qwc+MOKgU+TjIM63+j5iwQq54uK2E.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new key
s
test@172.17.0.2's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'test@172.17.0.2'"
and check to make sure that only the key(s) you wanted were added.
```

```
gurusaran@guru:~$ ssh test@172.17.0.2
test@172.17.0.2's password:
Welcome to Ubuntu 20.04.1 LTS (GNU/Linux 5.8.0-kali1-amd64 x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.
Last login: Sun Oct 11 10:55:37 2020 from 172.17.0.1
test@6d860c1c94cf:~$
```

6. Copy a file from server's "Document" folder to client's "Document" folder

Creating a document "testfile" folder at server side



Copy the "testfile" to client side