

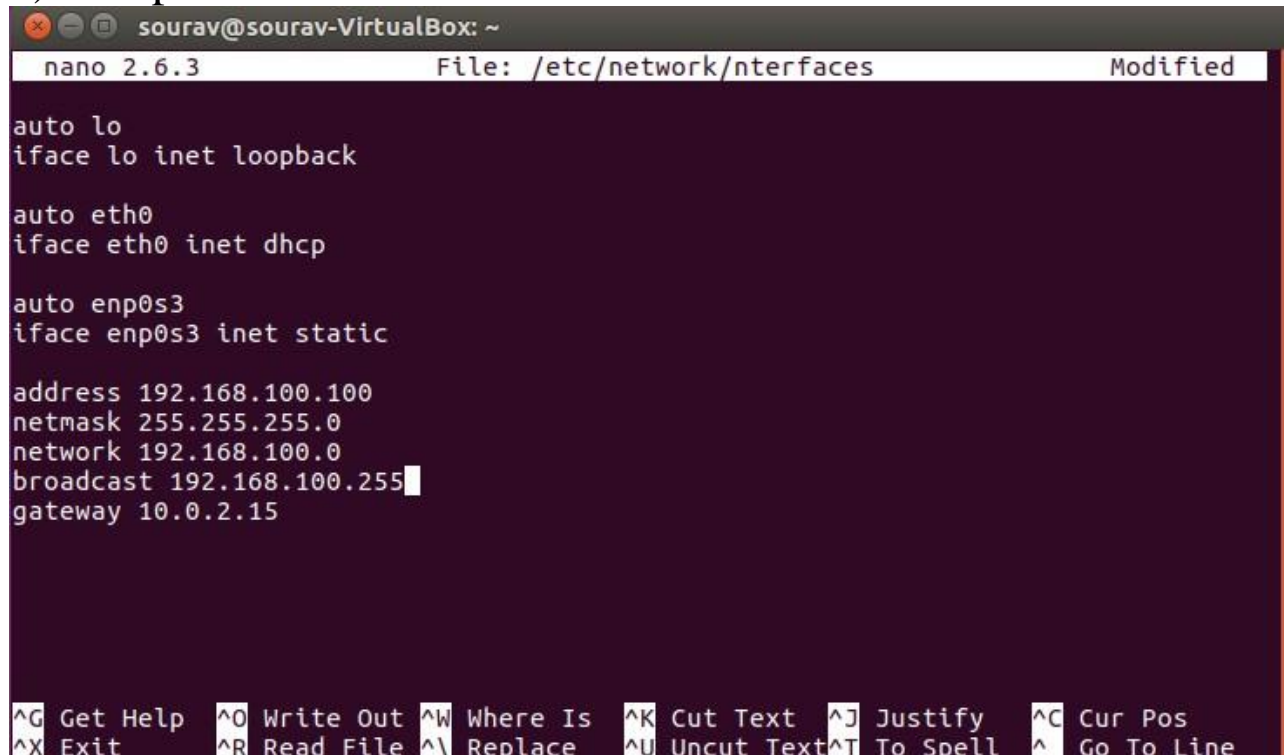
NFS, or Network File System, is a distributed file system protocol that allows you to mount remote directories on your server. This lets you manage storage space in a different location and write to that space from multiple clients. NFS provides a relatively quick and easy way to access remote systems over a network and works well in situations where the shared resources will be accessed regularly.

Aim: Our aim is to set NFS servers on two virtual machines (Ubuntu Operating system) specifically Ubuntu 16.04.

Before proceeding the 1st step would be *setting our own ip address* on two virtual machines .

Host

1) `sudo pico /etc/network/interfaces`



```
sourav@sourav-VirtualBox: ~  
nano 2.6.3 File: /etc/network/nterfaces Modified  
auto lo  
iface lo inet loopback  
  
auto eth0  
iface eth0 inet dhcp  
  
auto enp0s3  
iface enp0s3 inet static  
  
address 192.168.100.100  
netmask 255.255.255.0  
network 192.168.100.0  
broadcast 192.168.100.255  
gateway 10.0.2.15  
  
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos  
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

2)sudo service networking

3)restart ifconfig

```
sourav@sourav-VirtualBox: ~  
sourav@sourav-VirtualBox:~$ ifconfig  
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.100.100 netmask 255.255.255.0 broadcast 192.168.100.255  
    inet6 fe80::a00:27ff:fe2b:2490 prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:2b:24:90 txqueuelen 1000 (Ethernet)  
    RX packets 100 bytes 6220 (6.2 KB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 199 bytes 16073 (16.0 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  
    inet6 ::1 prefixlen 128 scopeid 0x10<host>  
    loop txqueuelen 1 (Local Loopback)  
    RX packets 3029 bytes 188394 (188.3 KB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 3029 bytes 188394 (188.3 KB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
sourav@sourav-VirtualBox:~$
```

Client

1)sudo pico /etc/network/interfaces

```
sourav12@sourav12-VirtualBox: ~
nano 2.6.3      File: /etc/network/interfaces

# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo
iface lo inet loopback

auto enps03
iface enps03 inet static

address 192.168.100.101
netmask 255.255.255.0
network 192.168.100.0
broadcast 192.168.100.255
gateway 10.0.2.15

[ Read 13 lines ]
^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify   ^C Cur Pos
^X Exit      ^R Read File ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

2)sudo service networking

3)restart ifconfig

```
sourav12@sourav12-VirtualBox: ~
sourav12@sourav12-VirtualBox:~$ ifconfig
enps03: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 192.168.100.101  netmask 255.255.255.0  broadcast 192.168.100.255
    inet6 fe80::e426:fb64:b8d8:f4e7  prefixlen 64  scopeid 0x20<link>
    inet6 2405:205:828d:6851:b45d:f7e2:51ef:21ed  prefixlen 64  scopeid 0x0<
global>
    ether 08:00:27:0c:fd:e1  txqueuelen 1000  (Ethernet)
    RX packets 7757  bytes 573296 (573.2 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 25521  bytes 1878122 (1.8 MB)
    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
    inet6 ::1  prefixlen 128  scopeid 0x10<host>
    loop txqueuelen 1  (Local Loopback)
    RX packets 193190  bytes 13405012 (13.4 MB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 193190  bytes 13405012 (13.4 MB)
    TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

sourav12@sourav12-VirtualBox:~$
```

Host ip address : 192.168.100.100

Client ip address : 192.168.100.101

Host

4)sudo apt get-update

5)sudo apt-get install nfs-kernel-server portmap

```
sourav@sourav-VirtualBox:~$ sudo apt-get install nfs-kernel-server portmap
[sudo] password for sourav:
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'rpcbind' instead of 'portmap'
nfs-kernel-server is already the newest version (1:1.2.8-9.2ubuntu1).
rpcbind is already the newest version (0.2.3-0.5).
0 upgraded, 0 newly installed, 0 to remove and 259 not upgraded.
sourav@sourav-VirtualBox:~$
```

6)sudo mkdir /mirror *//making a mirror directory which is also a shared folder for sharing of files between host and client*

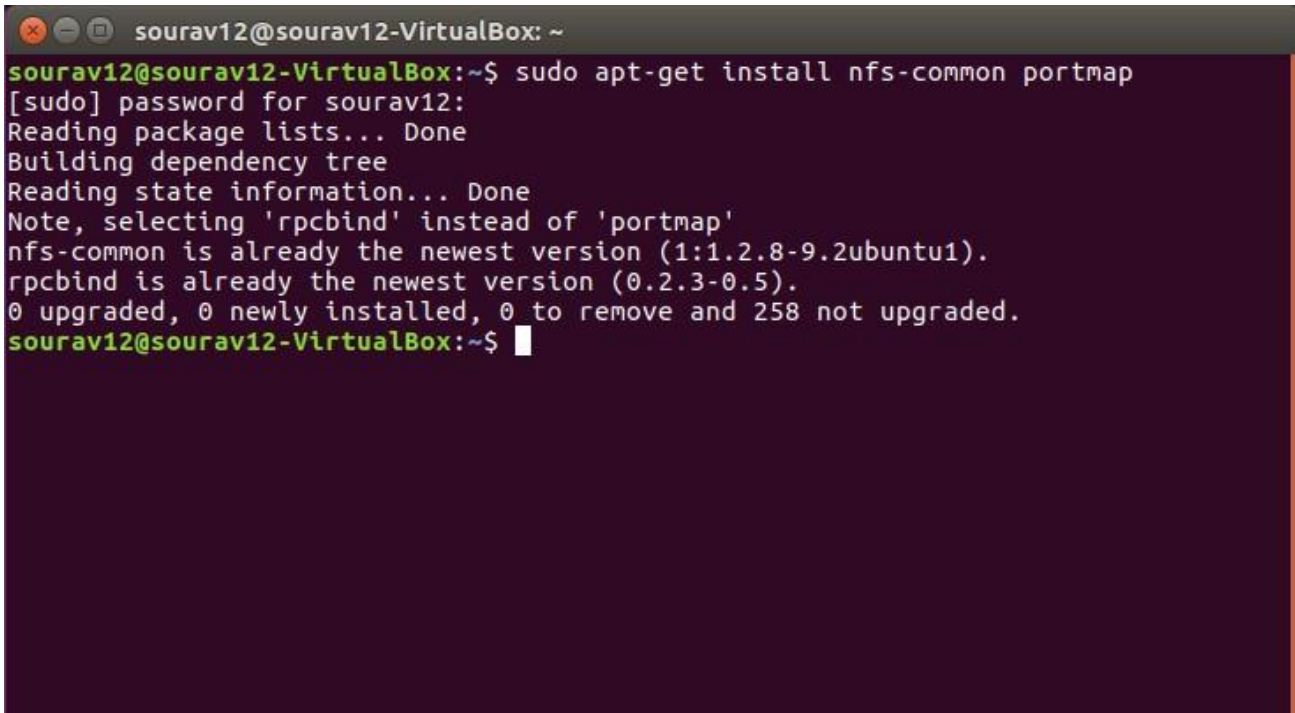
7)sudo chown nobody:nogroup /mirror *//the purpose of this step to change access of our mirror directory to nobody so that it can be accessed by the client computer*

```
sourav@sourav-VirtualBox: /mirror
sourav@sourav-VirtualBox:~$ sudo apt-get install nfs-kernel-server portmap
[sudo] password for sourav:
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'rpcbind' instead of 'portmap'
nfs-kernel-server is already the newest version (1:1.2.8-9.2ubuntu1).
rpcbind is already the newest version (0.2.3-0.5).
0 upgraded, 0 newly installed, 0 to remove and 259 not upgraded.
sourav@sourav-VirtualBox:~$ cd mirror
bash: cd: mirror: No such file or directory
sourav@sourav-VirtualBox:~$ cd /mirror
sourav@sourav-VirtualBox:/mirror$ ls
a2          hui.txt  ok       r3.txt    t1.txt    test2.txt  x1.txt
hello.txt  ikj.txt  prayag.txt  sourav.txt  test     test3.txt  zone.txt
sourav@sourav-VirtualBox:/mirror$
```

Client

4)sudo apt-get update

5)sudo apt-get install nfs-common portmap

A terminal window titled 'sourav12@sourav12-VirtualBox: ~' with a dark purple background. The terminal shows the command 'sourav12@sourav12-VirtualBox:~\$ sudo apt-get install nfs-common portmap' and its output. The output includes a password prompt, status messages like 'Reading package lists... Done', a note about selecting 'rpcbind' instead of 'portmap', and version information for 'nfs-common' and 'rpcbind'. It concludes with '0 upgraded, 0 newly installed, 0 to remove and 258 not upgraded.' and returns to the prompt.

```
sourav12@sourav12-VirtualBox:~$ sudo apt-get install nfs-common portmap
[sudo] password for sourav12:
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'rpcbind' instead of 'portmap'
nfs-common is already the newest version (1:1.2.8-9.2ubuntu1).
rpcbind is already the newest version (0.2.3-0.5).
0 upgraded, 0 newly installed, 0 to remove and 258 not upgraded.
sourav12@sourav12-VirtualBox:~$
```

Host

8)sudo pico /etc/exports *//here we add the directories which we want to share with the client computer*

```
sourav@sourav-VirtualBox: ~
nano 2.6.3 File: /etc/exports Modified
# /etc/exports: the access control list for filesystems which may be exported
# to NFS clients. See exports(5).
#
# Example for NFSv2 and NFSv3:
# /srv/homes hostname1(rw,sync,no_subtree_check) hostname2(ro,sync,no_sub$
/mirror *(rw,sync)
/home *(rw,sync)

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

rw: *This option gives the client computer both read and write access to the volume.*

sync: *This option forces NFS to write changes to disk before replying. This results in a more stable and consistent environment since the reply reflects the actual state of the remote volume. However, it also reduces the speed of file operations.*

*Here we have specified the * so that our directory becomes public and any other ip address can mount our directory into itself. If we want to specify that only a particular p address should be allowed to access our directories we can specify the ip address*

9)sudo exportfs -a //To export our directory to the client computer

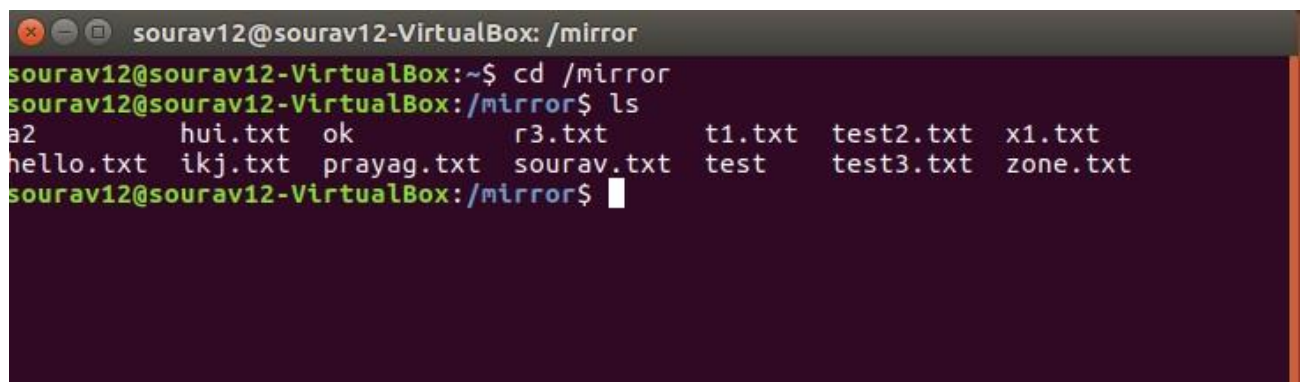
Client

6) `sudo mkdir -p /mirror` // We are making a new directory in the client where we can mount the mirror folder of the mirror folder of the host computer.

7) `sudo mount 192.168.100.100:/mirror /mirror` // mounting the mirror directory of host to client

8) `sudo mount 192.168.100.100:/home /home` // mounting the home directory of host to client

9) `df -h` // To check if our directories are actually mounted or not

A terminal window titled 'sourav12@sourav12-VirtualBox: /mirror' shows the following commands and output:

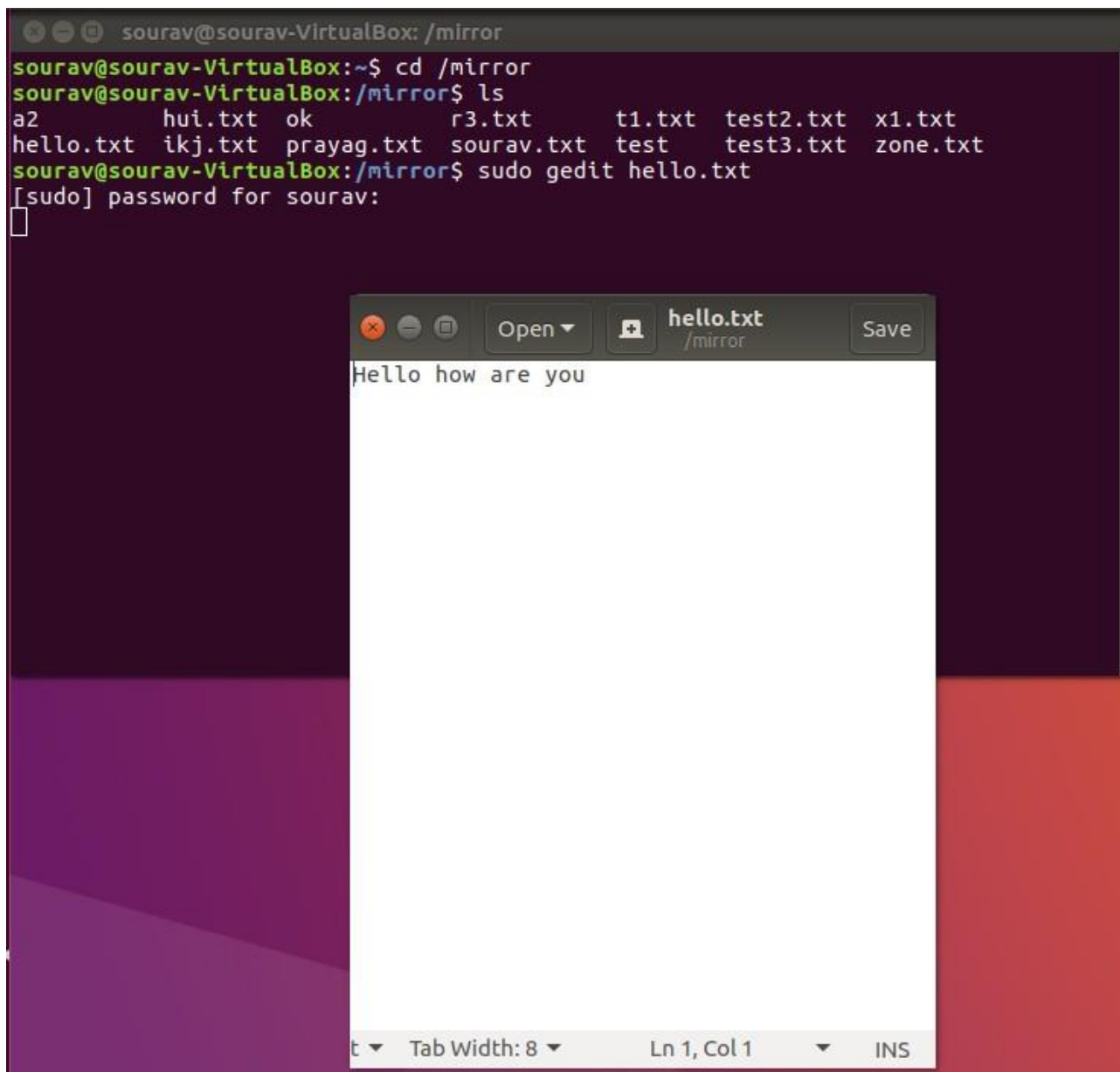
```
sourav12@sourav12-VirtualBox:~$ cd /mirror
sourav12@sourav12-VirtualBox:/mirror$ ls
a2          hui.txt  ok       r3.txt    t1.txt    test2.txt x1.txt
hello.txt   ikj.txt  prayag.txt sourav.txt test      test3.txt zone.txt
sourav12@sourav12-VirtualBox:/mirror$
```

Host

10) `sudo /etc/init.d/nfs-kernel-server start` // starting up of server

```
sourav@sourav-VirtualBox: /mirror
sourav@sourav-VirtualBox:~$ cd /mirror
sourav@sourav-VirtualBox:/mirror$ ls
a2          hui.txt  ok          r3.txt      t1.txt  test2.txt  x1.txt
hello.txt   ikj.txt  prayag.txt  sourav.txt  test    test3.txt  zone.txt
sourav@sourav-VirtualBox:/mirror$ sudo gedit hello.txt
[sudo] password for sourav:

```



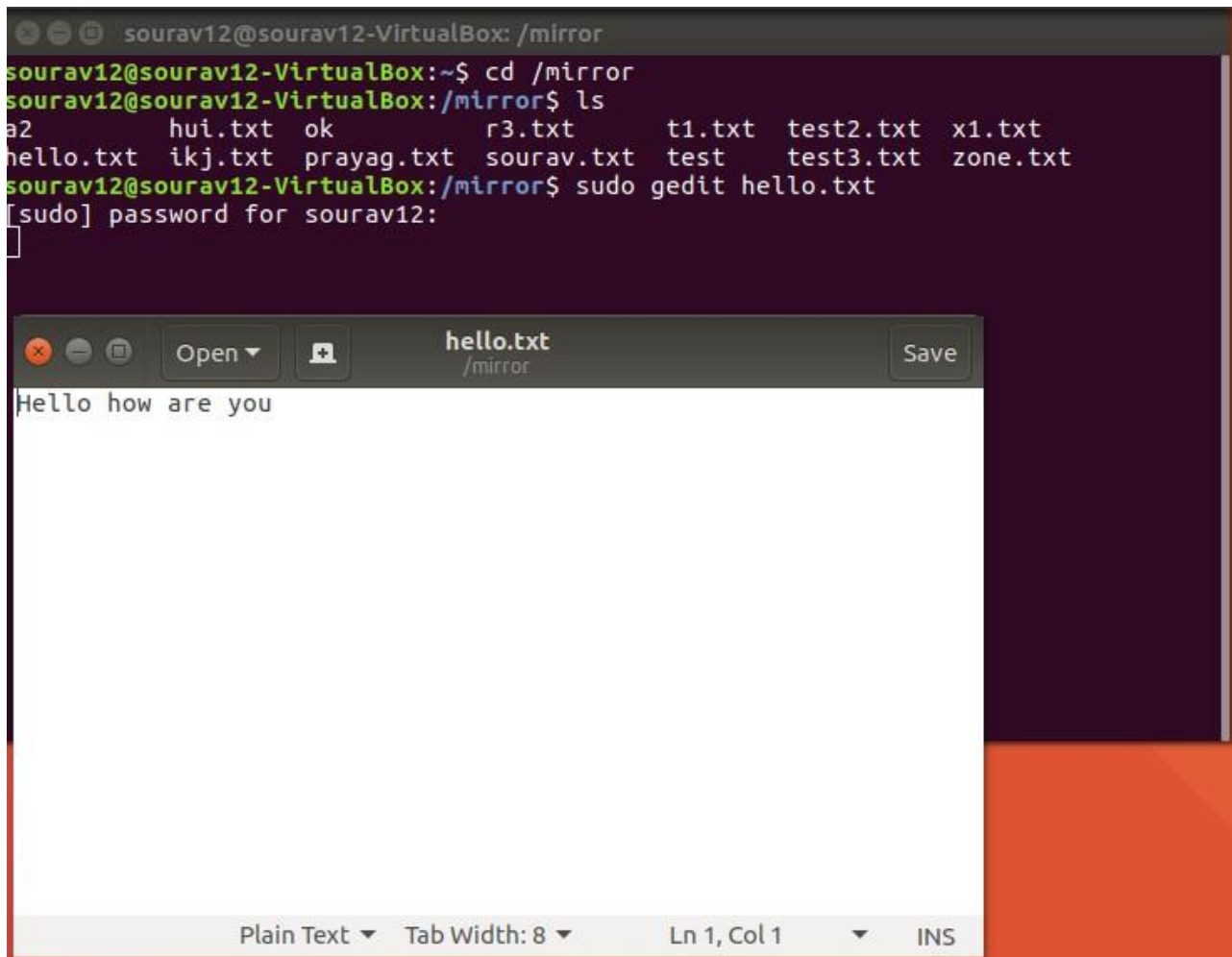
The image shows a terminal window with a dark purple background. The terminal output shows the user navigating to the /mirror directory, listing files, and opening a text editor (gedit) to edit hello.txt. A password prompt is visible. Overlaid on the terminal is a gedit window titled 'hello.txt /mirror'. The window has a title bar with standard Linux window controls (close, maximize, fullscreen) and buttons for 'Open', 'Save', and a file icon. The text area of the gedit window contains the text 'Hello how are you'. At the bottom of the gedit window, a status bar shows 'Tab Width: 8', 'Ln 1, Col 1', and 'INS'.

```
Hello how are you
```

Tab Width: 8 Ln 1, Col 1 INS


```
sourav12@sourav12-VirtualBox: /mirror
sourav12@sourav12-VirtualBox:~$ cd /mirror
sourav12@sourav12-VirtualBox:/mirror$ ls
a2      hui.txt  ok       r3.txt    t1.txt  test2.txt x1.txt
hello.txt ikj.txt  prayag.txt sourav.txt test    test3.txt zone.txt
sourav12@sourav12-VirtualBox:/mirror$ sudo gedit hello.txt
[sudo] password for sourav12:

```



```

Hello how are you

```

Plain Text ▾ Tab Width: 8 ▾ Ln 1, Col 1 ▾ INS