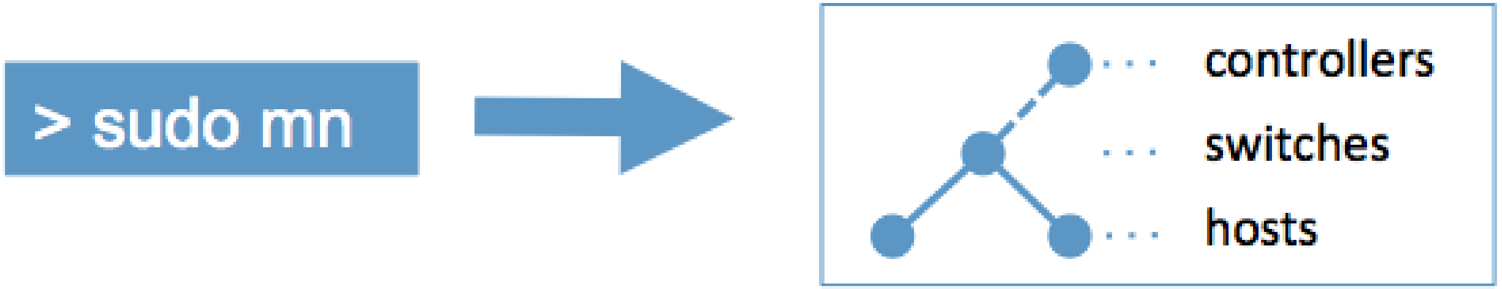
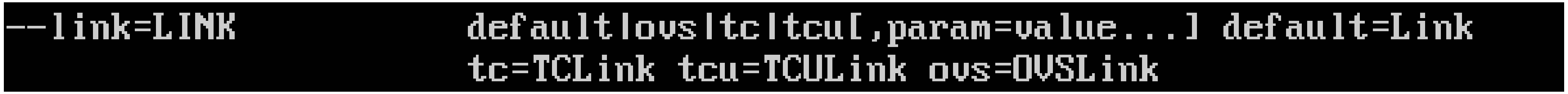
Mininet



```
> sudo mn
```

Session 3

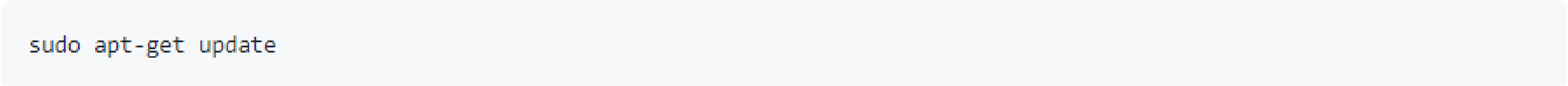
- **--link** - defines the link type via command line mininet startup



```
--link=LINK           default|ovs|tc|tcu[,param=value...] default=Link
                      tc=TCLink tcu=TCULink ovs=OVSLink
```

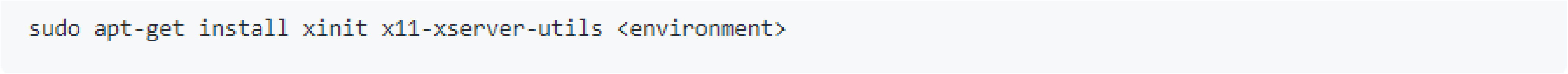
- ✓ iPerf is a tool for active measurements of the maximum achievable bandwidth on IP networks.
- ✓ The ping command sends packets of data to a specific IP address on a network, and then lets you know how long it took to transmit that data and get a response.

First, log in to the VM in its console window and make sure apt is up to date:



```
sudo apt-get update
```

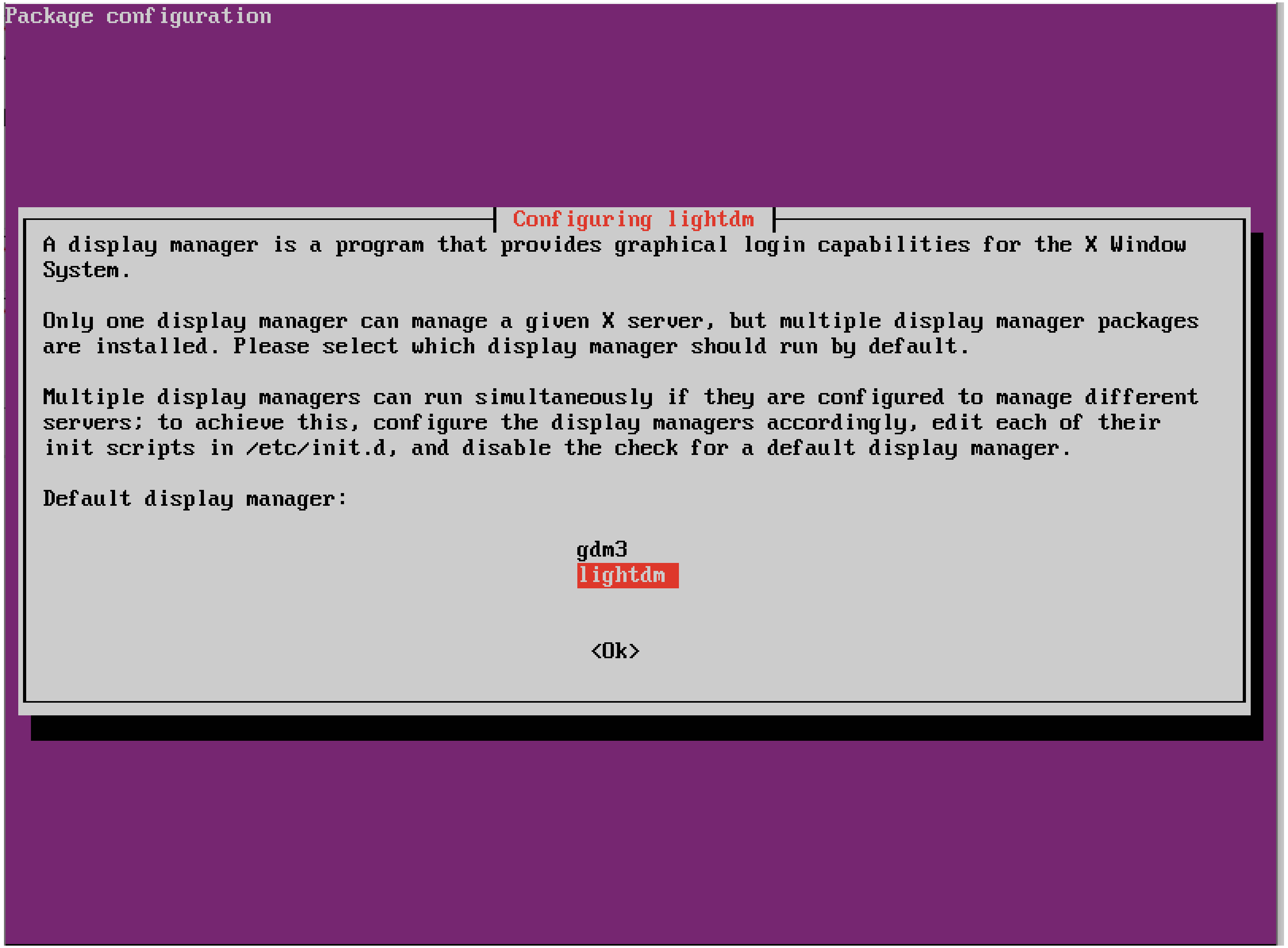
Then, install the desktop environment



```
sudo apt-get install xinit x11-xserver-utils <environment>
```

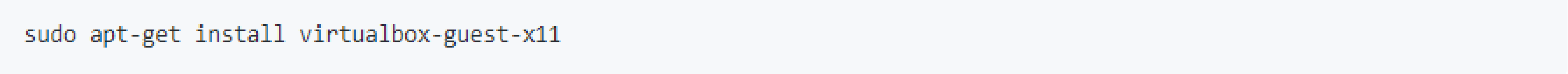
Replace the <environment> with “lxde”.

Next, select the “lightdm”.



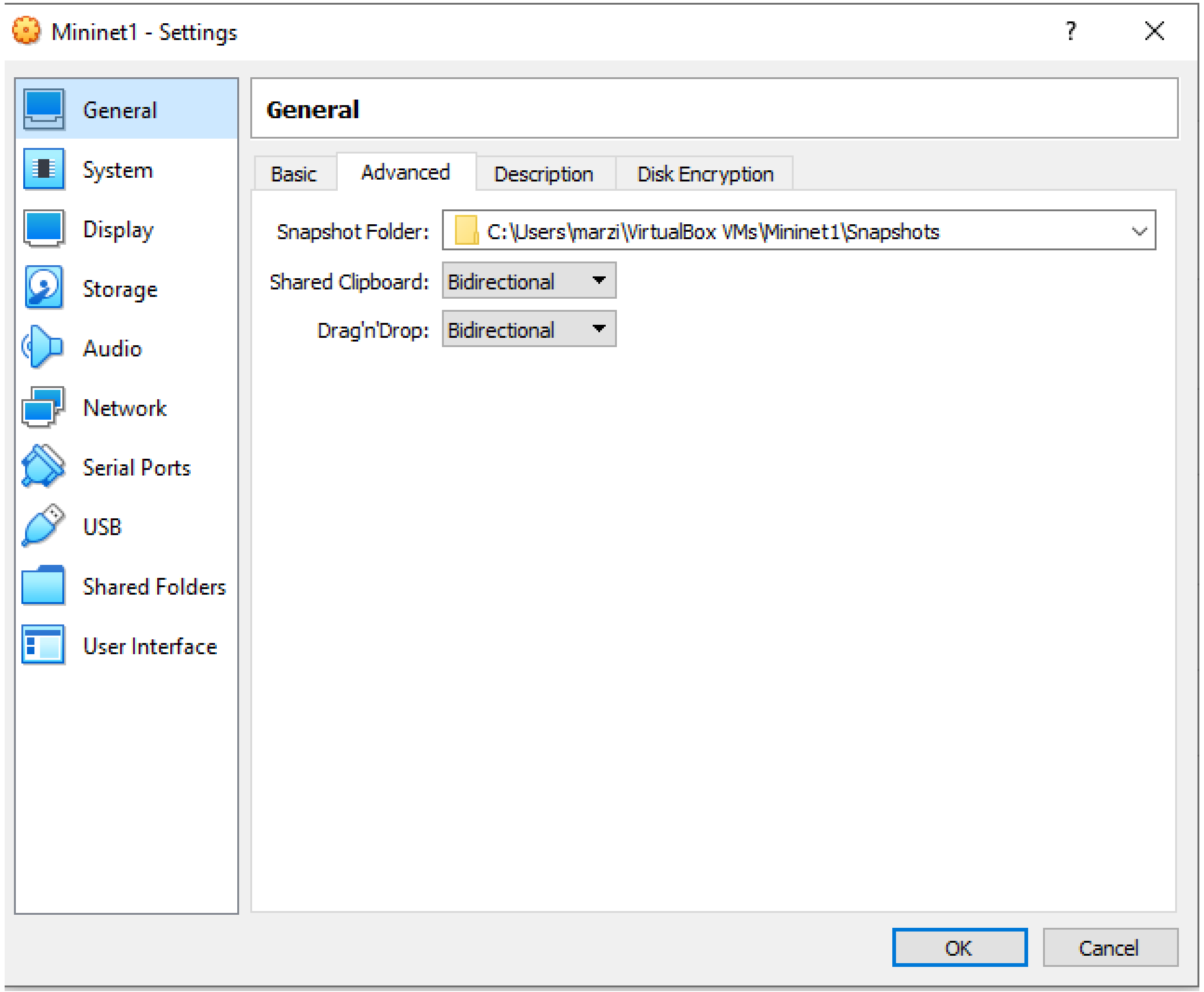
```
Package configuration

                        ┤ Configuring lightdm ├
 A display manager is a program that provides graphical login capabilities for the X Window
 System.

 Only one display manager can manage a given X server, but multiple display manager packages
 are installed. Please select which display manager should run by default.

 Multiple display managers can run simultaneously if they are configured to manage different
 servers; to achieve this, configure the display managers accordingly, edit each of their
 init scripts in /etc/init.d, and disable the check for a default display manager.

 Default display manager:

                                          gdm3
                                          lightdm


                                           <Ok>
```

If you are running VirtualBox, you will want to install the VirtualBox Guest Additions using



```
sudo apt-get install virtualbox-guest-x11
```

You may need to reboot the VM and/or restart the GUI environment.



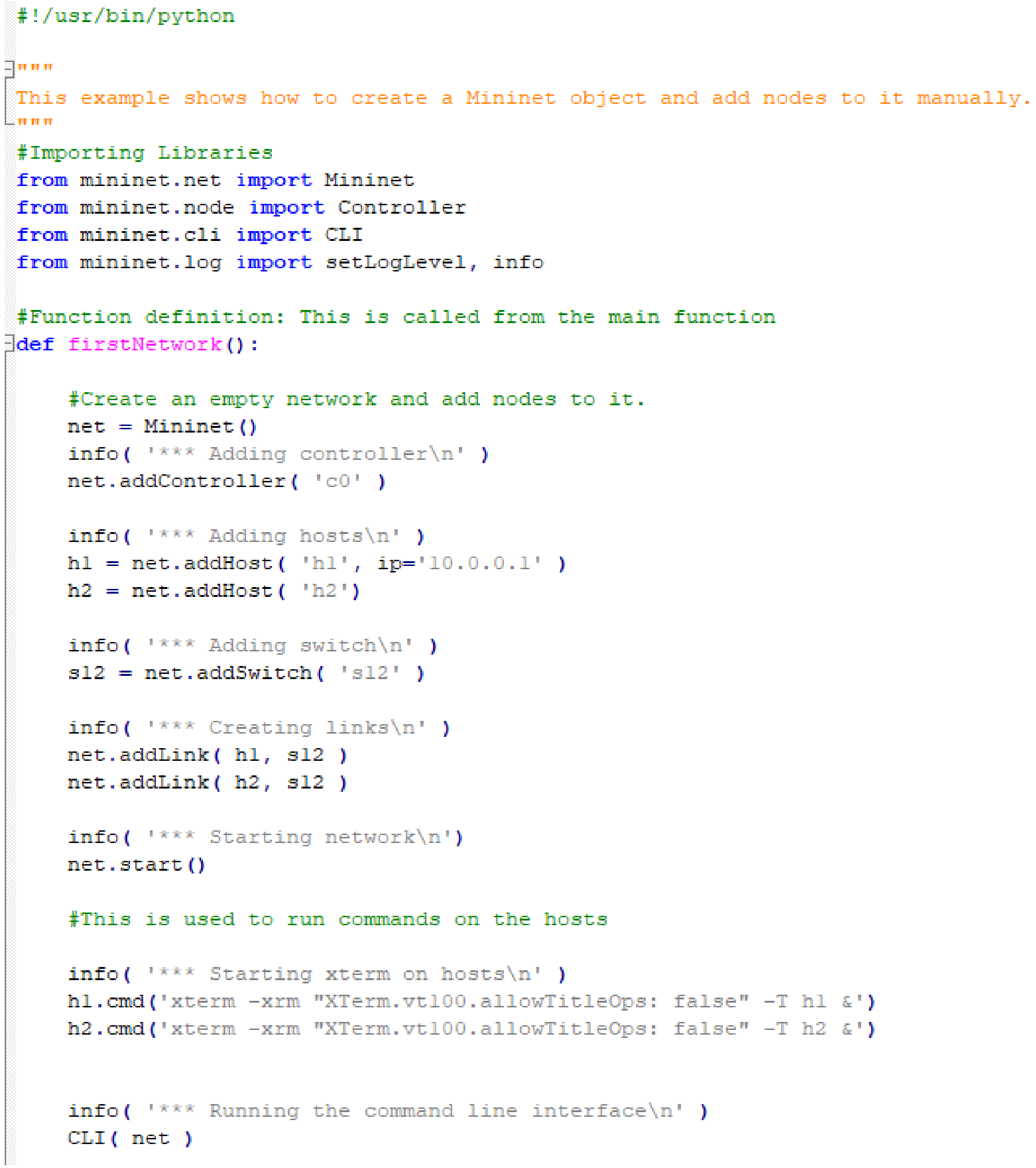
Mininet1 - Settings

General

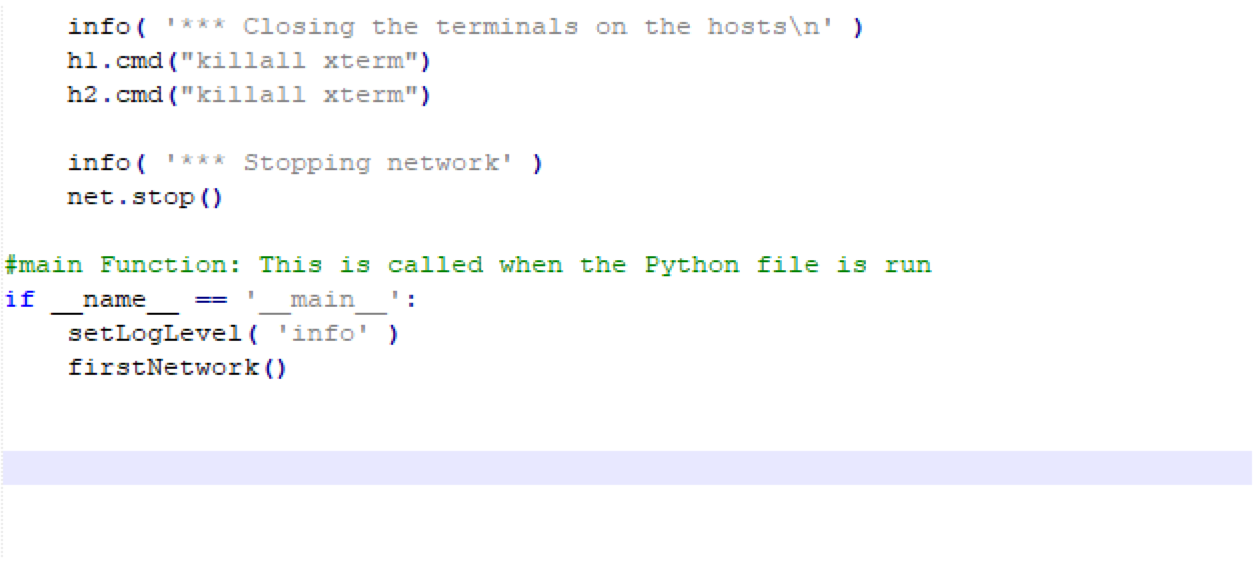
Snapshot Folder: C:\Users\marzi\VirtualBox VMs\Mininet1\Snapshots

Shared Clipboard: Bidirectional

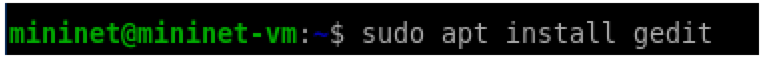
Drag'n'Drop: Bidirectional



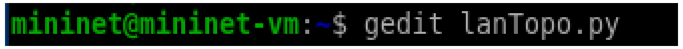
```python
#!/usr/bin/python

"""
This example shows how to create a Mininet object and add nodes to it manually.
"""
#Importing Libraries
from mininet.net import Mininet
from mininet.node import Controller
from mininet.cli import CLI
from mininet.log import setLogLevel, info

#Function definition: This is called from the main function
def firstNetwork():

    #Create an empty network and add nodes to it.
    net = Mininet()
    info( '*** Adding controller\n' )
    net.addController( 'c0' )

    info( '*** Adding hosts\n' )
    h1 = net.addHost( 'h1', ip='10.0.0.1' )
    h2 = net.addHost( 'h2')

    info( '*** Adding switch\n' )
    s12 = net.addSwitch( 's12' )

    info( '*** Creating links\n' )
    net.addLink( h1, s12 )
    net.addLink( h2, s12 )

    info( '*** Starting network\n')
    net.start()

    #This is used to run commands on the hosts

    info( '*** Starting xterm on hosts\n' )
    h1.cmd('xterm -xrm "XTerm.vt100.allowTitleOps: false" -T h1 &')
    h2.cmd('xterm -xrm "XTerm.vt100.allowTitleOps: false" -T h2 &')


    info( '*** Running the command line interface\n' )
    CLI( net )
```



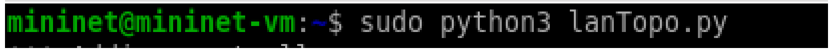
```python
    info( '*** Closing the terminals on the hosts\n' )
    h1.cmd("killall xterm")
    h2.cmd("killall xterm")

    info( '*** Stopping network' )
    net.stop()

#main Function: This is called when the Python file is run
if __name__ == '__main__':
    setLogLevel( 'info' )
    firstNetwork()
```



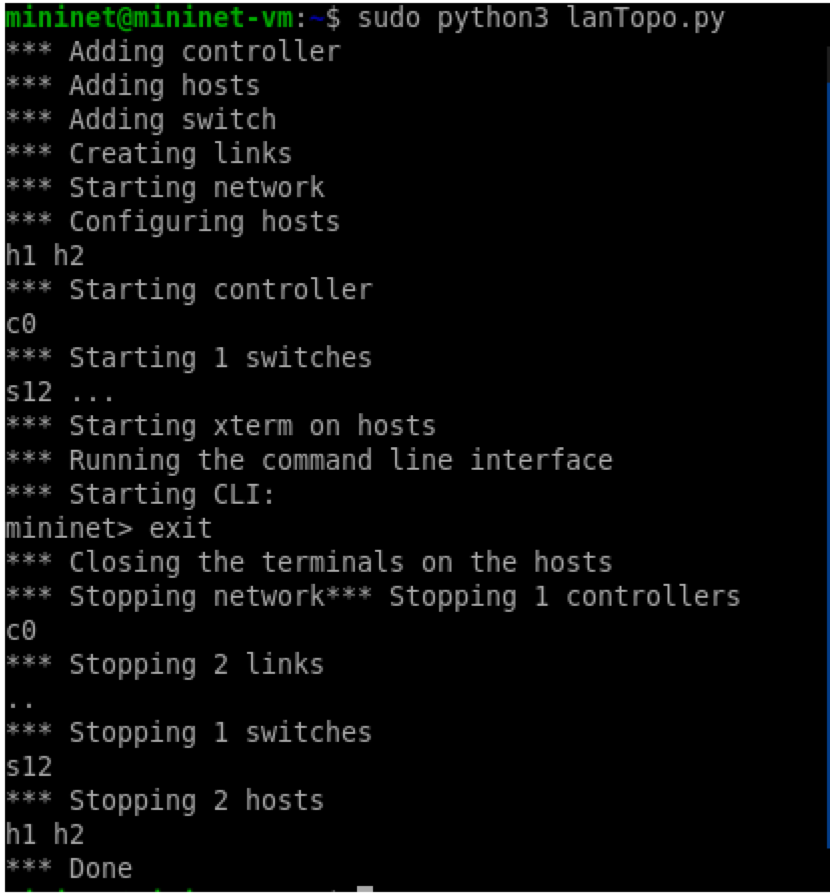
```
mininet@mininet-vm:~$ sudo apt install gedit
```



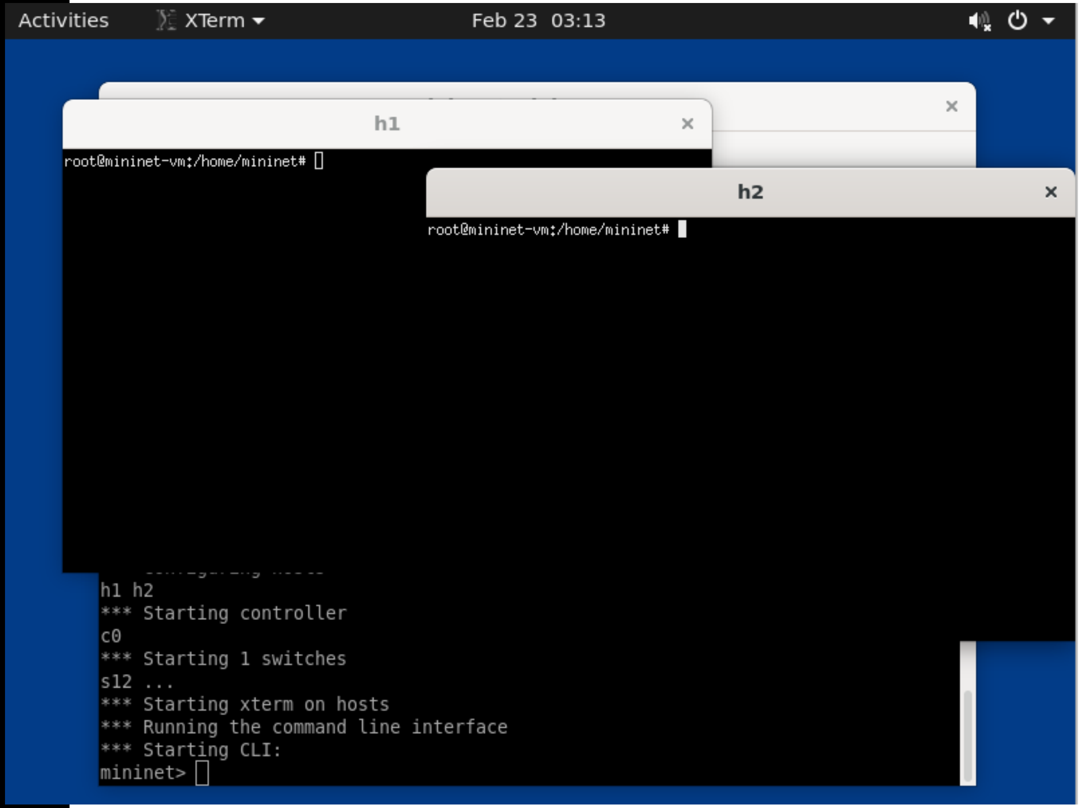
```
mininet@mininet-vm:~$ gedit lanTopo.py
```



```
mininet@mininet-vm:~$ sudo python3 lanTopo.py
```



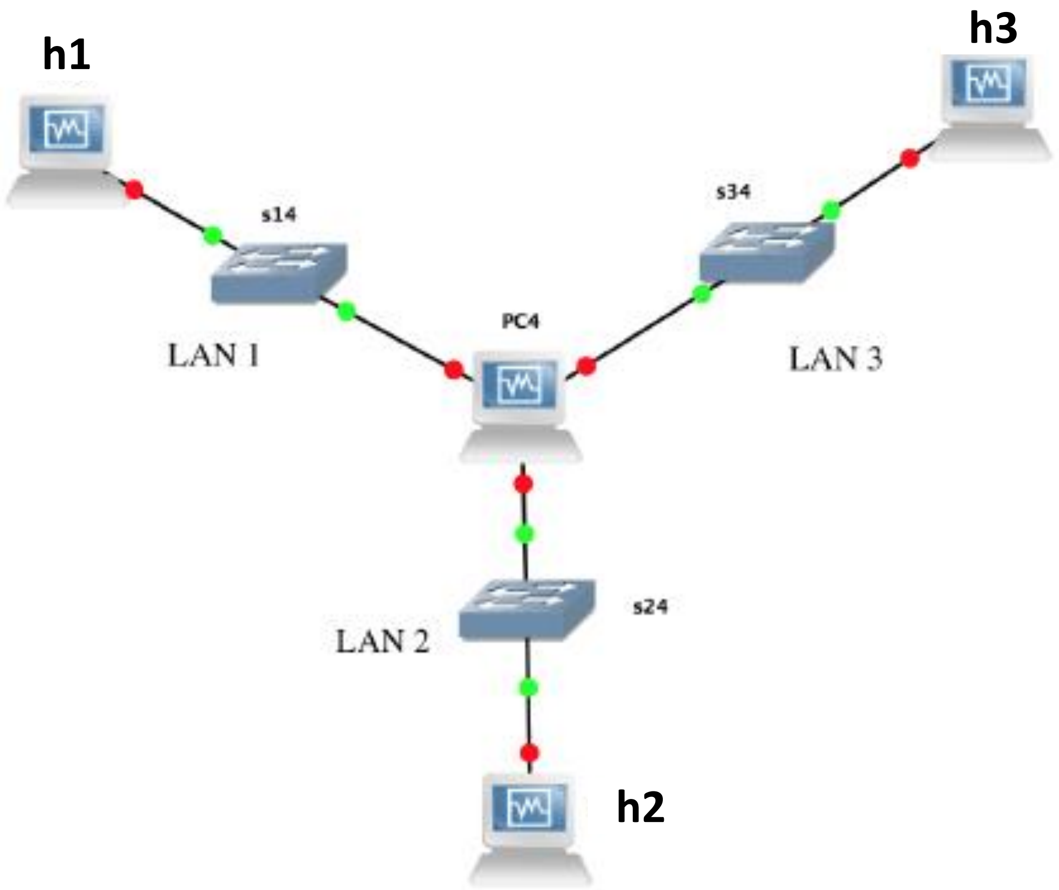
```
mininet@mininet-vm:~$ sudo python3 lanTopo.py
*** Adding controller
*** Adding hosts
*** Adding switch
*** Creating links
*** Starting network
*** Configuring hosts
h1 h2
*** Starting controller
c0
*** Starting 1 switches
s12 ...
*** Starting xterm on hosts
*** Running the command line interface
*** Starting CLI:
mininet> exit
*** Closing the terminals on the hosts
*** Stopping network*** Stopping 1 controllers
c0
*** Stopping 2 links
..
*** Stopping 1 switches
s12
*** Stopping 2 hosts
h1 h2
*** Done
```



```
root@mininet-vm:/home/mininet#
```

```
root@mininet-vm:/home/mininet#
```

```
h1 h2
*** Starting controller
c0
*** Starting 1 switches
s12 ...
*** Starting xterm on hosts
*** Running the command line interface
*** Starting CLI:
mininet>
```


h1
h3
s14
s34
PC4
LAN 1
LAN 3
LAN 2
s24
h2