

CS2007-Assignment-11

In first terminal, we have to run the loadbalance.py file

```
csg@Ubuntu1: ~  
csg@Ubuntu1:~$ sudo python3 ~/mininet/custom/loadbalance.py  
*** errRun: ['which', 'mnexec']  
/usr/bin/mnexec  
0*** errRun: ['which', 'ifconfig']  
/usr/sbin/ifconfig  
0 _popen ['mnexec', '-cd', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:c'] 5018*** c : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
*** c : ('echo A | telnet -e A 127.0.0.1 6633',)  
Telnet escape character is 'A'.  
Trying 127.0.0.1...  
telnet: Unable to connect to remote host: Connection refused  
Unable to contact the remote controller at 127.0.0.1:6633  
*** errRun: ['grep', '-c', 'processor', '/proc/cpuinfo']  
2  
0*** Setting resource limits  
*** Creating network  
*** Adding controller  
_popen ['mnexec', '-cd', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:c0'] 5023*** c0 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
*** c0 : ('echo A | telnet -e A 127.0.0.1 6653',)  
Telnet escape character is 'A'.  
Trying 127.0.0.1...  
telnet: Unable to connect to remote host: Connection refused  
Unable to contact the remote controller at 127.0.0.1:6653  
*** c0 : ('echo A | telnet -e A 127.0.0.1 6653',)  
Telnet escape character is 'A'.  
Trying 127.0.0.1...  
telnet: Unable to connect to remote host: Connection refused  
Unable to contact the remote controller at 127.0.0.1:6653  
Setting remote controller to 127.0.0.1:6653  
*** Adding hosts:  
*** errRun: ['which', 'mnexec']  
/usr/bin/mnexec  
0*** errRun: ['which', 'ifconfig']  
/usr/sbin/ifconfig  
0 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:h1'] 5031*** h1 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
h1 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:h2'] 5033*** h2 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
h2 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:h3'] 5035*** h3 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
h3 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:h4'] 5037*** h4 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
h4 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:h5'] 5039*** h5 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
h5 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:r'] 5041*** r : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
r _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:t1'] 5043*** t1 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
t1 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:t2'] 5045*** t2 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
t2 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:t3'] 5047*** t3 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
t3 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:t4'] 5049*** t4 : ('unset HISTFILE; stty -echo; set +m',)  
unset HISTFILE; stty -echo; set +m  
t4 _popen ['mnexec', '-cdn', 'env', 'PS1=\x7f', 'bash', '--norc', '--noediting', '-is', 'mininet:t5'] 5051*** t5 : ('unset HISTFILE; stty -echo; set +m',)
```

In another terminal, we have to run the loadbalancepox.py

```
csg@Ubuntu1: ~  
csg@Ubuntu1:~$ pox/pox.py forwarding.loadbalancepox  
POX 0.7.0 (gar) / Copyright 2011-2020 James McCauley, et al.  
N= 5 K= 1  
WARNING: version: Support for Python 3 is experimental.  
INFO: core: POX 0.7.0 (gar) is up.  
INFO: openflow.of_01: [00-00-00-00-00-01] connected  
handle_ConnectionUP from dpid 1 00-00-00-00-00-01  
sent ICMP actions  
INFO: forwarding.loadbalancepox: [00-00-00-00-00-01] ready  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 3  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 3  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 6  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 6  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 4  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:00:06 to 33:33:00:00:00:02 via port 1  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:00:06 to 33:33:00:00:00:02 via port 1  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 5  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 5  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 2  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 2  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 4  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 4  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:00:06 to 33:33:00:00:00:02 via port 1  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:00:06 to 33:33:00:00:00:02 via port 1  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 5  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 5  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 6  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 6  
unknown packet type: 34525  
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 3  
unknown packet type: 34525  
s: received tcp packet from 00:00:00:00:00:06 to 00:00:00:00:01:ff via port 1  
adding TCP flow (10.0.1.1, 10.0.0.1, 43042, 22) to t4  
s: received tcp packet from 00:00:00:00:00:06 to 00:00:00:00:01:ff via port 1
```

Now we have to run ssh ifconfig commands on the mininet console

```
mininet> h1 ssh 10.0.0.1 ifconfig
*** errRun: ['stty', '-icanon', 'min', '1']
0^CsendInt: writing chr(3)

mininet> h1 ssh 10.0.0.1 ifconfig
*** errRun: ['stty', '-icanon', 'min', '1']
0^CsendInt: writing chr(3)

mininet> h1 ssh 10.0.0.1 ifconfig
*** errRun: ['stty', '-icanon', 'min', '1']
0^CsendInt: writing chr(3)

mininet> h1 ssh 10.0.0.1 ifconfig
*** errRun: ['stty', '-icanon', 'min', '1']
0^C
```

We will receive the following information on the pox console

```
s: received tcp packet from 00:00:00:00:00:06 to 00:00:00:00:01:ff via port 1
adding TCP flow (10.0.0.1,10.0.0.1,22,43042) to t4
s: received tcp packet from 00:00:00:00:00:06 to 00:00:00:00:01:ff via port 1
adding TCP flow (10.0.0.1,10.0.0.1,22,43042) to t4
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 2
unknown packet type: 34525
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 2
unknown packet type: 34525
s: received tcp packet from 00:00:00:00:01:ff to 00:00:00:00:00:04 via port 5
adding TCP flow (10.0.0.1,10.0.0.1,22,43042) to t4
s: received tcp packet from 00:00:00:00:01:ff to 00:00:00:00:00:04 via port 5
adding TCP flow (10.0.0.1,10.0.0.1,53674,22) to t2
s: received tcp packet from 00:00:00:00:00:06 to 00:00:00:00:01:ff via port 1
adding TCP flow (10.0.0.1,10.0.0.1,22,53674) to t4
s: received tcp packet from 00:00:00:00:01:ff to 00:00:00:00:00:04 via port 3
adding TCP flow (10.0.0.1,10.0.0.1,22,53674) to t4
s: received tcp packet from 00:00:00:00:00:06 to 00:00:00:00:01:ff via port 1
adding TCP flow (10.0.0.1,10.0.0.1,32974,22) to t1
s: received tcp packet from 00:00:00:00:00:06 to 00:00:00:00:01:ff via port 1
adding TCP flow (10.0.0.1,10.0.0.1,32974,22) to t1
s: received tcp packet from 00:00:00:00:01:ff to 00:00:00:00:00:04 via port 2
adding TCP flow (10.0.0.1,10.0.0.1,22,32974) to t5
s: received tcp packet from 00:00:00:00:01:ff to 00:00:00:00:00:04 via port 2
adding TCP flow (10.0.0.1,10.0.0.1,22,32974) to t5
s: received tcp packet from 00:00:00:00:00:06 to 00:00:00:00:01:ff via port 1
adding TCP flow (10.0.0.1,10.0.0.1,50046,22) to t4
s: received tcp packet from 00:00:00:00:01:ff to 00:00:00:00:00:04 via port 5
adding TCP flow (10.0.0.1,10.0.0.1,22,50046) to t2
s: received tcp packet from 00:00:00:00:01:ff to 00:00:00:00:00:04 via port 5
adding TCP flow (10.0.0.1,10.0.0.1,22,50046) to t2
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 4
unknown packet type: 34525
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 4
unknown packet type: 34525
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 6
unknown packet type: 34525
s: received unknown packet from 00:00:00:00:01:ff to 33:33:00:00:00:02 via port 6
unknown packet type: 34525
```

If we dump the flows for s, we will get the following information on the mininet console

```
mininet> sh ovs-ofctl dump-flows s
cookie=0x0, duration=567.407s, table=0, n_packets=0, n_bytes=0, icmp,in_port="s-eth1" actions=output:"s-eth2"
cookie=0x0, duration=567.408s, table=0, n_packets=0, n_bytes=0, icmp,in_port="s-eth2" actions=output:"s-eth1"
cookie=0x0, duration=515.989s, table=0, n_packets=3, n_bytes=222, tcp,dl_src=00:00:00:00:06,dl_dst=00:00:00:01:ff,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=43042,tp_dst=22 actions=output:"s-eth5"
cookie=0x0, duration=515.989s, table=0, n_packets=0, n_bytes=0, tcp,dl_src=00:00:00:00:01:ff,dl_dst=00:00:00:00:06,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=22,tp_dst=43042 actions=output:"s-eth1"
cookie=0x0, duration=514.963s, table=0, n_packets=7, n_bytes=518, tcp,dl_src=00:00:00:00:01:ff,dl_dst=00:00:00:00:04,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=22,tp_dst=43042 actions=output:"s-eth2"
cookie=0x0, duration=514.963s, table=0, n_packets=0, n_bytes=0, tcp,dl_src=00:00:00:00:04,dl_dst=00:00:00:00:01:ff,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=43042,tp_dst=22 actions=output:"s-eth1"
cookie=0x0, duration=506.242s, table=0, n_packets=3, n_bytes=222, tcp,dl_src=00:00:00:00:06,dl_dst=00:00:00:00:01:ff,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=53674,tp_dst=22 actions=output:"s-eth3"
cookie=0x0, duration=506.242s, table=0, n_packets=0, n_bytes=0, tcp,dl_src=00:00:00:00:01:ff,dl_dst=00:00:00:00:06,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=22,tp_dst=53674 actions=output:"s-eth1"
cookie=0x0, duration=505.235s, table=0, n_packets=7, n_bytes=518, tcp,dl_src=00:00:00:00:01:ff,dl_dst=00:00:00:00:04,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=22,tp_dst=53674 actions=output:"s-eth5"
cookie=0x0, duration=505.235s, table=0, n_packets=0, n_bytes=0, tcp,dl_src=00:00:00:00:04,dl_dst=00:00:00:00:01:ff,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=53674,tp_dst=22 actions=output:"s-eth1"
cookie=0x0, duration=495.709s, table=0, n_packets=3, n_bytes=222, tcp,dl_src=00:00:00:00:06,dl_dst=00:00:00:00:01:ff,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=32974,tp_dst=22 actions=output:"s-eth2"
cookie=0x0, duration=495.709s, table=0, n_packets=0, n_bytes=0, tcp,dl_src=00:00:00:00:01:ff,dl_dst=00:00:00:00:06,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=22,tp_dst=32974 actions=output:"s-eth1"
cookie=0x0, duration=494.707s, table=0, n_packets=7, n_bytes=518, tcp,dl_src=00:00:00:00:01:ff,dl_dst=00:00:00:00:04,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=22,tp_dst=32974 actions=output:"s-eth5"
cookie=0x0, duration=494.707s, table=0, n_packets=0, n_bytes=0, tcp,dl_src=00:00:00:00:04,dl_dst=00:00:00:00:01:ff,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=32974,tp_dst=22 actions=output:"s-eth1"
cookie=0x0, duration=483.350s, table=0, n_packets=6, n_bytes=444, tcp,dl_src=00:00:00:00:06,dl_dst=00:00:00:00:01:ff,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=50046,tp_dst=22 actions=output:"s-eth3"
cookie=0x0, duration=483.350s, table=0, n_packets=0, n_bytes=0, tcp,dl_src=00:00:00:00:01:ff,dl_dst=00:00:00:00:06,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=22,tp_dst=50046 actions=output:"s-eth1"
cookie=0x0, duration=482.322s, table=0, n_packets=10, n_bytes=740, tcp,dl_src=00:00:00:00:01:ff,dl_dst=00:00:00:00:06,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=22,tp_dst=50046 actions=output:"s-eth3"
cookie=0x0, duration=482.322s, table=0, n_packets=0, n_bytes=0, tcp,dl_src=00:00:00:00:04,dl_dst=00:00:00:00:01:ff,nw_src=10.0.0.1,nw_dst=10.0.0.1,tp_src=50046,tp_dst=22 actions=output:"s-eth1"
```