MANVINDER TOOR
CS380
EXERCISE 5

Problem 1: Verifying the Network

```
Terminal
[11/02/2017 21:15] seed@ubuntu:~$ ifconfig
eth13     Link encap:Ethernet  HWaddr 08:00:27:11:f5:29
          inet addr:10.0.2.4  Bcast:10.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fe11:f529/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:92 errors:0 dropped:0 overruns:0 frame:0
          TX packets:90 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:16334 (16.3 KB)  TX bytes:12572 (12.5 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:22 errors:0 dropped:0 overruns:0 frame:0
          TX packets:22 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1865 (1.8 KB)  TX bytes:1865 (1.8 KB)

[11/02/2017 21:15] seed@ubuntu:~$
```

10.0.2.4

```
Terminal
[11/02/2017 21:15] seed@ubuntu:~$ ifconfig
eth14     Link encap:Ethernet  HWaddr 08:00:27:a7:bc:82
          inet addr:10.0.2.5  Bcast:10.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fea7:bc82/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:43 errors:0 dropped:0 overruns:0 frame:0
          TX packets:100 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:8429 (8.4 KB)  TX bytes:13308 (13.3 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:26 errors:0 dropped:0 overruns:0 frame:0
          TX packets:26 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:2222 (2.2 KB)  TX bytes:2222 (2.2 KB)

[11/02/2017 21:15] seed@ubuntu:~$
```

10.0.2.5

Different HWaddr (Mac Addr)

```
[11/02/2017 21:15] seed@ubuntu:~$ ping -c 5 10.0.2.5
PING 10.0.2.5 (10.0.2.5) 56(84) bytes of data.
64 bytes from 10.0.2.5: icmp_req=1 ttl=64 time=0.344 ms
64 bytes from 10.0.2.5: icmp_req=2 ttl=64 time=0.720 ms
64 bytes from 10.0.2.5: icmp_req=3 ttl=64 time=0.679 ms
64 bytes from 10.0.2.5: icmp_req=4 ttl=64 time=0.532 ms
64 bytes from 10.0.2.5: icmp_req=5 ttl=64 time=0.507 ms

--- 10.0.2.5 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.344/0.556/0.720/0.135 ms
[11/02/2017 21:19] seed@ubuntu:~$
```

0% packet loss

```
[11/02/2017 21:15] seed@ubuntu:~$ ping -c 5 10.0.2.4
PING 10.0.2.4 (10.0.2.4) 56(84) bytes of data.
64 bytes from 10.0.2.4: icmp_req=1 ttl=64 time=0.442 ms
64 bytes from 10.0.2.4: icmp_req=2 ttl=64 time=0.684 ms
64 bytes from 10.0.2.4: icmp_req=3 ttl=64 time=0.674 ms
64 bytes from 10.0.2.4: icmp_req=4 ttl=64 time=0.701 ms
64 bytes from 10.0.2.4: icmp_req=5 ttl=64 time=0.696 ms

--- 10.0.2.4 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3998ms
rtt min/avg/max/mdev = 0.442/0.639/0.701/0.101 ms
[11/02/2017 21:18] seed@ubuntu:~$
```

0% packet loss

Problem 2: Writing a Packet Sniffer

Summarize http://www.tcpdump.org/pcap.htm

First we determine the interface we want to sniff on, for example on linux it's the ethX (in our case we are using eth13). After that we initialize pcap and tell it what device we are sniffing on(eth13) we can hold multiple sessions to tell different devices apart. We can then determine if we want to sniff on any particular port or protocol (TCP/UDP/any ports).Next Pcap will wait for a packet and everytime it gets a packet we can do anything we want, we can display it, save it, or do nothing. After it's done the session closes.

```
[11/02/2017 21:38] seed@ubuntu:~/Desktop$ gcc -o sniffex sniffex.c -lpcap
[11/02/2017 21:38] seed@ubuntu:~/Desktop$ ./sniffex eth13
sniffex - Sniffer example using libpcap
Copyright (c) 2005 The Tcpdump Group
THERE IS ABSOLUTELY NO WARRANTY FOR THIS PROGRAM.

Device: eth13
Number of packets: 10
Filter expression: ip
Couldn't open device eth13: eth13: You don't have permission to capture on that
device (socket: Operation not permitted)
[11/02/2017 21:38] seed@ubuntu:~/Desktop$
```

Don’t have permission to capture on that device, didn’t work

```
Terminal
Device: eth13
Number of packets: 10
Filter expression: ip

Packet number 1:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: ICMP

Packet number 2:
       From: 10.0.2.4
         To: 10.0.2.5
   Protocol: ICMP

Packet number 3:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: ICMP

Packet number 4:
```

```
Terminal

Packet number 4:
       From: 10.0.2.4
         To: 10.0.2.5
   Protocol: ICMP

Packet number 5:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: ICMP

Packet number 6:
       From: 10.0.2.4
         To: 10.0.2.5
   Protocol: ICMP

Packet number 7:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: ICMP
```

```
Packet number 8:
       From: 10.0.2.4
         To: 10.0.2.5
   Protocol: ICMP

Packet number 9:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: ICMP

Packet number 10:
       From: 10.0.2.4
         To: 10.0.2.5
   Protocol: ICMP

Capture complete.
[11/02/2017 21:49] seed@ubuntu:~/Desktop$
```

Sniffing TCP

```
Capture complete.
[11/02/2017 22:00] seed@ubuntu:~/Desktop$ gcc -o sniffex sniffex.c -lpcap
[11/02/2017 22:10] seed@ubuntu:~/Desktop$ sudo ./sniffex eth13
sniffex - Sniffer example using libpcap
Copyright (c) 2005 The Tcpdump Group
THERE IS ABSOLUTELY NO WARRANTY FOR THIS PROGRAM.

Device: eth13
Number of packets: 10
Filter expression: tcp
^C[11/02/2017 22:15] seed@ubuntu:~/Desktop$
```

Nothing happened

Problem 3: Password Sniffing

Telnetting in

```
[11/02/2017 22:15] seed@ubuntu:~$ telnet 10.0.2.4
Trying 10.0.2.4...
Connected to 10.0.2.4.
Escape character is '^]'.
Ubuntu 12.04.2 LTS
ubuntu login: seed
Password:
Welcome to Ubuntu 12.04.2 LTS (GNU/Linux 3.5.0-37-generic i686)

 * Documentation:  https://help.ubuntu.com/

New release '14.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
```

Creating testfile.txt

```
Terminal
New release '14.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

[11/02/2017 22:27] seed@ubuntu:~$ ls
Desktop           Music                                  Pictures
Documents         openssl-1.0.1                          Public
Downloads         openssl_1.0.1-4ubuntu5.11.debian.tar.gz Templates
elggData          openssl_1.0.1-4ubuntu5.11.dsc          Videos
examples.desktop  openssl_1.0.1.orig.tar.gz
[11/02/2017 22:27] seed@ubuntu:~$ cd Desktop
[11/02/2017 22:27] seed@ubuntu:~/Desktop$ nano textfile.txt
[11/02/2017 22:28] seed@ubuntu:~/Desktop$
```

Confirming text file

```
Terminal
Capture complete.
[11/02/2017 22:00] seed@ubuntu:~/Desktop$ gcc -o sniffex sniffex.c -lpcap
[11/02/2017 22:10] seed@ubuntu:~/Desktop$ sudo ./sniffex eth13
sniffex - Sniffer example using libpcap
Copyright (c) 2005 The Tcpdump Group
THERE IS ABSOLUTELY NO WARRANTY FOR THIS PROGRAM.

Device: eth13
Number of packets: 10
Filter expression: tcp
^C[11/02/2017 22:15] seed@ubuntu:~/Desktop$ sudo service openbsd-inetd start
[sudo] password for seed:
 * Starting internet superserver inetd                                [ OK ]
[11/02/2017 22:26] seed@ubuntu:~/Desktop$ ls
Gedit.desktop  libcap2.22      Pacgen-1.10  sniffex.c   Wireshark.desktop
Ghex.desktop   Netwag.desktop  sniffex      sniffex.c~
[11/02/2017 22:29] seed@ubuntu:~/Desktop$ ls
Gedit.desktop  libcap2.22      Pacgen-1.10  sniffex.c   textfile.txt
Ghex.desktop   Netwag.desktop  sniffex      sniffex.c~  Wireshark.desktop
[11/02/2017 22:30] seed@ubuntu:~/Desktop$
```

Password Sniffing

```
   Payload (12 bytes):
00000   0d 0a 50 61 73 73 77 6f  72 64 3a 20                ..Password:

Packet number 31:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: TCP
   Src port: 42181
   Dst port: 23

Packet number 32:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: TCP
   Src port: 42181
   Dst port: 23
   Payload (1 bytes):
00000   64                                                  d
```

```
Terminal
Packet number 34:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: TCP
   Src port: 42181
   Dst port: 23
   Payload (1 bytes):
00000   65                                                e

Packet number 35:
       From: 10.0.2.4
         To: 10.0.2.5
   Protocol: TCP
   Src port: 23
   Dst port: 42181

Packet number 36:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: TCP
```

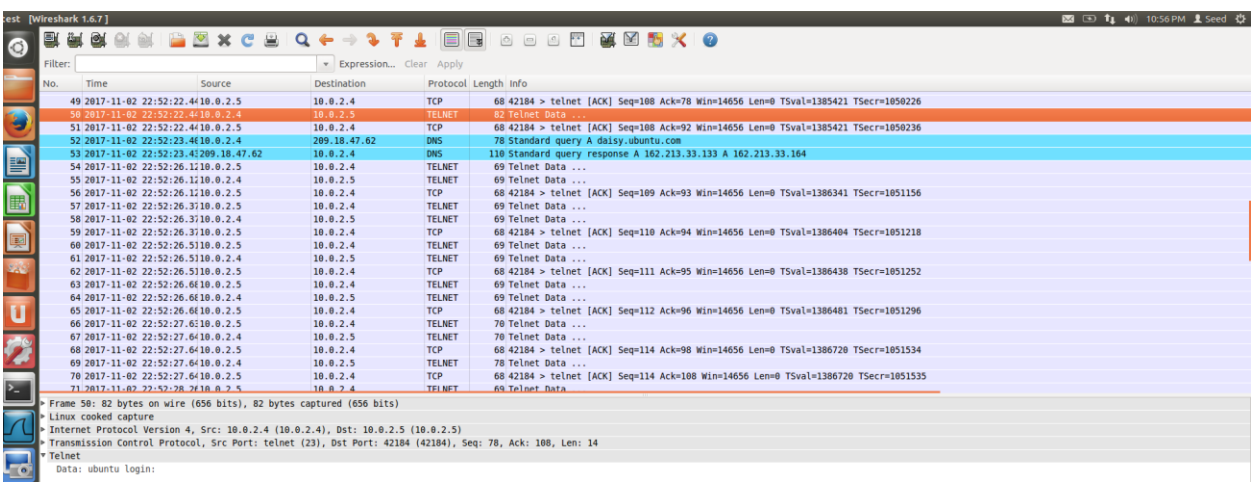
```
Terminal
Packet number 36:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: TCP
   Src port: 42181
   Dst port: 23
   Payload (1 bytes):
00000   65                                                e

Packet number 37:
       From: 10.0.2.4
         To: 10.0.2.5
   Protocol: TCP
   Src port: 23
   Dst port: 42181

Packet number 38:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: TCP
```

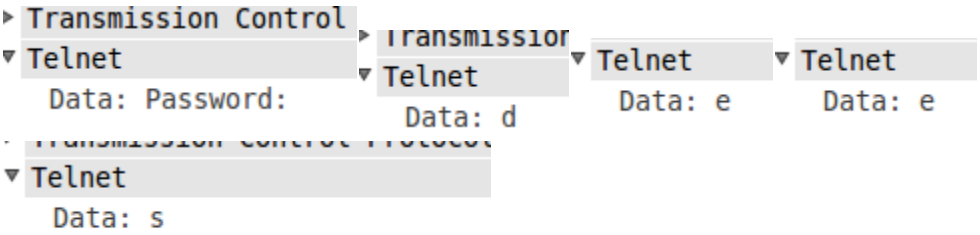
```
Terminal
Packet number 38:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: TCP
   Src port: 42181
   Dst port: 23
   Payload (1 bytes):
00000   73                                                s

Packet number 39:
       From: 10.0.2.4
         To: 10.0.2.5
   Protocol: TCP
   Src port: 23
   Dst port: 42181

Packet number 40:
       From: 10.0.2.5
         To: 10.0.2.4
   Protocol: TCP
```

Captured password dees and login but login wasn't captured properly came in as sseeeedd(doubles of each input)

WIRE SHARK

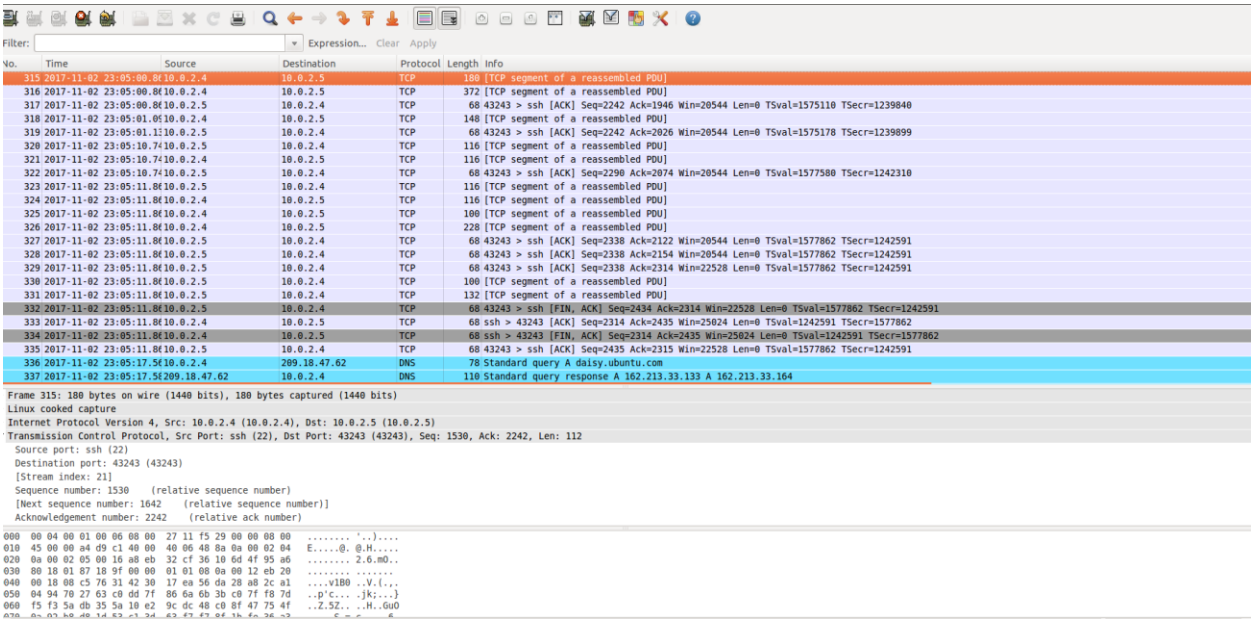
Shows password and login under TELNET Data





Telnet doesn't seem that secure since it shows exactly what is happening, doesn't seem to have any encryption

Problem 4: SSH



Ssh seems to not show the data, looks like it's decrypted and harder to decode just by looking at it