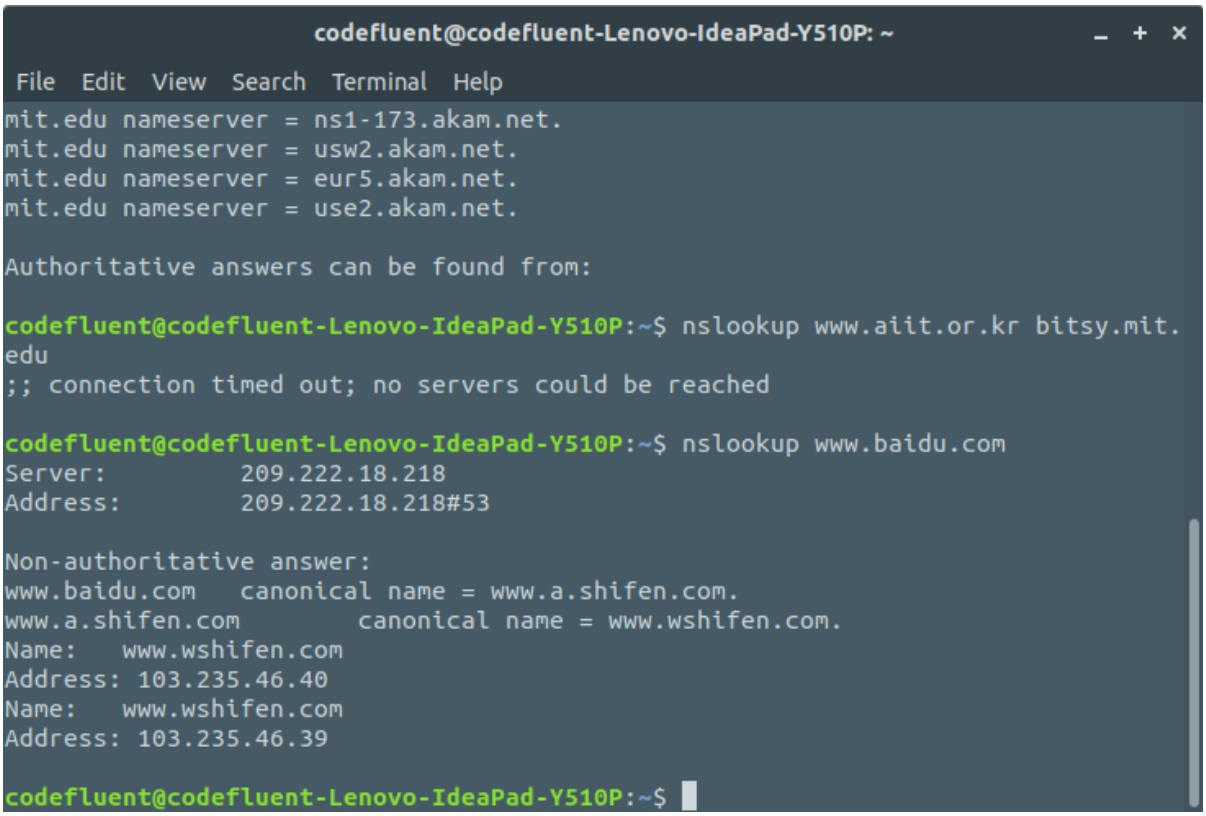
Section 1

1.
    a. A vm is an important tool for a cyber security engineer in order to test, develop, and deploy code that protect systems that the engineer wishes to target.
    b. A vm is important for a hacker in order to have a copy of his/her target that was found out in initial recon. A hacker wil be able to use a vm to explore the best techniques for infiltration.

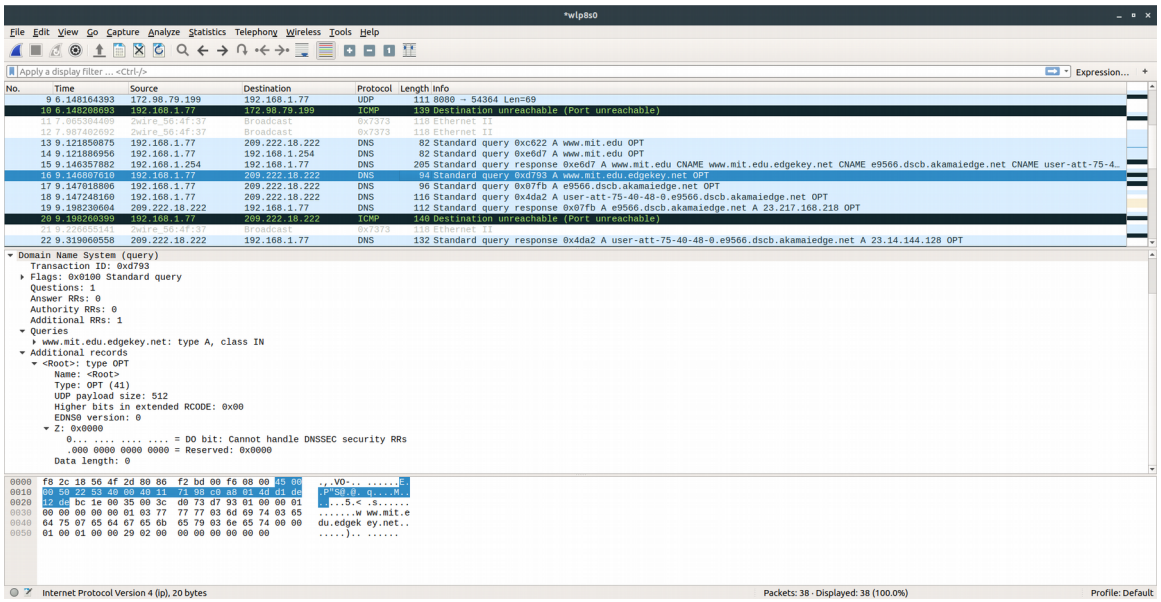
Section 2

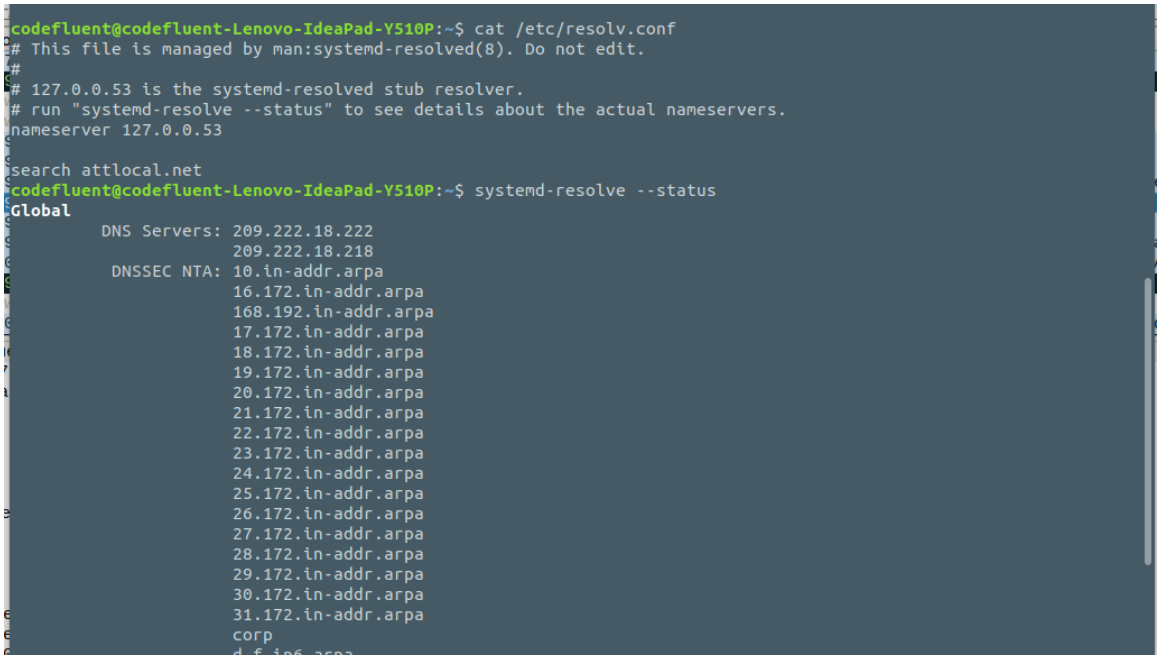
2. The IP address of the baidu server is 103.235.46.39



Section 3

3. My DNS queries were sent to 209.222.18.222, which is indeed my local DNS server. I used “cat /etc/resolve.conf” find my local DNS server with “systemd-resolve –status”.





```
codefluent@codefluent-Lenovo-IdeaPad-Y510P:~$ cat /etc/resolv.conf
# This file is managed by man:systemd-resolved(8). Do not edit.
#
# 127.0.0.53 is the systemd-resolved stub resolver.
# run "systemd-resolve --status" to see details about the actual nameservers.
nameserver 127.0.0.53

search attlocal.net
codefluent@codefluent-Lenovo-IdeaPad-Y510P:~$ systemd-resolve --status
Global
         DNS Servers: 209.222.18.222
                      209.222.18.218
          DNSSEC NTA: 10.in-addr.arpa
                      16.172.in-addr.arpa
                      168.192.in-addr.arpa
                      17.172.in-addr.arpa
                      18.172.in-addr.arpa
                      19.172.in-addr.arpa
                      20.172.in-addr.arpa
                      21.172.in-addr.arpa
                      22.172.in-addr.arpa
                      23.172.in-addr.arpa
                      24.172.in-addr.arpa
                      25.172.in-addr.arpa
                      26.172.in-addr.arpa
                      27.172.in-addr.arpa
                      28.172.in-addr.arpa
                      29.172.in-addr.arpa
                      30.172.in-addr.arpa
                      31.172.in-addr.arpa
                      corp
                      d.f.ip6.arpa
```

Section 4

4. The IP address of my computer is 192.168.1.77

5. The upper layer protocol field value is ICMP protocol.

6. 20 bytes in the IP header. There are 520 bytes for the total UDP length, so 520 – 20 = 500 bytes for the payload.

7. Yes the IP datagram has been fragmented since there is a flag set to 0x01, meaning the IP was fragmented.