Name: _Tyler Selsene_ Date: _9/29/16_

Pledge: _I Pledge My Honor that I Have Abided_
by the Stevens Honor System

Case Study - Access My Server

You are setting up a web server at home and want it accessible from the Internet.
Your local IP address is 192.168.1.50, your router's LAN address is 192.168.1.1 (both
on a class C network). Your web server will run on port 80.

Your router's WAN port has the IP 65.24.56.14. Its LAN port 80 is used for the router's administration
panel (which you can also access through 192.168.1.1:80), but for security reasons, we disabled WAN
administration.

You have heard of a service called dyndns.org and have set up a dynamic host called
yourname.dyndns.org which points to your WAN address 65.24.56.14.

You have a friend Hercules that wants to access your server. He has a local IP of 192.168.1.36, a router's
LAN IP of 192.168.1.1, and a WAN address of 35.63.24.6

Hercules's ISP has a caching DNS server at 35.63.24.16. Assume it starts with nothing stored.

There is an authoritative DNS server at 35.63.63.115 containing the information:
- dyndns.org nameserver: 35.63.12.134

As you can see, dyndns.org has its own authoritative name server, storing the IPs of all their subdomains
(including yours).

All name servers listen on port 53.

You know of the following routers between yourself and Hercules.

HerculesRouter: 192.168.1.1 - 35.63.24.6
YourRouter: 192.168.1.1 - 65.24.56.14
WanRouter: 35.63.24.59 - 65.24.23.47

You called Hercules and told him the domain name you registered.

Each answer is worth 10 points.
THIS IS INDIVIDUAL WORK. Any signs of copying will result in a 0.

1) What should you set up on your router so that Hercules can access the web site you are hosting?
Explain. You short set up performed to Port 80 so Hercules can access the website.

2) When Hercules tries to access your server by domain name, what type of request will be made first?
   a) HTTP
   b) DNS
   c) NAT
   d) routing
   e) FTP

Explain your answer.
The DNS request will search for the Domain name, which is why it goes first.

3) Assuming the ISP's DNS server's cache is initially blank, what must it do if it receives a request for dyndns.org? What happens if it has a valid entry in its cache? If there is no entry, the DNS server must send a request to the Name Server to find dyndns.org. If there is a valid entry, the DNS will respond answer with dyndns.org's Name.

4) The WAN Router connects two networks. Supply the addresses of those two networks in dotted decimal format.
65. 24. 23. 47
35. 63. 24. 59

5) Can the authoritative DNS server at 35.63.63.115 answer authoritatively for yourname.dyndns.org?
If not, what action does it need to take to determine the IP address of yourname.dyndns.org?
Yes. If Not, the action it needs to take is to ask dyndns.org for the address

6) Assuming Hercules now knows the IP address of your computer and is ready to make a request to your web server, fill in the source and destination of the packet as it leaves his computer. You may assume the ephemeral source port has been set to 57000.

```
/------------------------------------------------\
| Source: 192.168.1.36 : 57000                   |
| Destination: 192.168.1.50 : 80                 |
\------------------------------------------------/
```

7) Fill in the source and destination of the packet after it passes through Hercules's router.

```
/------------------------------------------------\
| Source: 35.63.24.6 : 57000   80                |
| Destination: 192.168.1.50 : 80                 |
\------------------------------------------------/
```

8) After the web server request leaves Hercules's home router, it passes through other devices in the network before it gets to your computer. List, in order, the devices it passes through up to but not

including your computer. For each device, list the network address the packet goes from to the network address the packet goes to.

9) Fill in the source and destination of the response packet after it leaves your computer.

```
/------------------------------------------------\
| Source:      142.168. 1 . 50 : ▓▓▓ 80          |
| Destination: 192.168.1.1 :     53              |
\------------------------------------------------/
```

10) Fill in the source and destination of the response packet after it leaves your router.

```
                    65.
/---------------------------------------------\
| Source:      ▓▓▓.24.56.14 : 80              |
| Destination: 142.168.1.1 : 53               |
\---------------------------------------------/
```

8)

) Hercules Router
35.63.24.6
↓
35.63.24.6
DNS
35.63.24.6
↓
35.63.24.59
WAN
65.24.56.47

65.24.56.14
Router