How I did it:
First I installed bind9 on dns1 and named on dns0. Both install the BIND dns server functionality.

DNS0:
First I went into /etc/namd.conf and configured the global options and zones:

```
options {
        listen-on port 53 { any; };
        directory "/var/named";
        allow-query { any; };
        allow-recursion { localhost; 100.64.12.0/24; 10.21.32.0/24; };
        recursion true;
        allow-transfer { 100.64.12.6; 127.0.0.1; };
        allow-update {100.64.12.6; };
        also-notify {100.64.12.6; };
        notify true;
};
zone "."                        IN {type hint; file "named.ca"; };
zone "dundermifflin.com."       IN {type primary; file "/etc/named/db.dm"; };
zone "12.64.100.in-addr.arpa"   IN {type primary; file "/etc/named/db.100.64.12"; };
zone "32.21.10.in-addr.arpa"    IN {type primary; file "/etc/named/db.10.21.32"; };
include "/etc/named.rfc1912.zones";
```

At the bottom you can see the zones I specified, one forward DNS zone and two reverse DNS zones. To allow for dns1 to update their zones I did an allow-update on the dns1 IP.

I then went into /etc/named/ and created the 3 zone files: db.dm, db.100.64.12 and db.10.21.32

Db.dm:

```
$TTL 1h
@ IN SOA dns0.dundermifflin.com. loch1722.dundermifflin.com. (
        20231113 ; serial
        1d ; refresh
        1h ; retry
        7d ; expire
        1h ); negative cache
  IN NS dns0.dundermifflin.com.
  IN NS dns1.dundermifflin.com.

router.dundermifflin.com.       IN A 100.64.0.12
dmz.dundermifflin.com.          IN A 100.64.12.2
dns0.dundermifflin.com.         IN A 100.64.12.2
web0.dundermifflin.com.         IN A 100.64.12.3
web1.dundermifflin.com.         IN A 100.64.12.4
lan.dundermifflin.com.          IN A 10.21.32.1
nfs.dundermifflin.com.          IN A 10.21.32.2
```

```
dns1.dundermifflin.com.          IN A 100.64.12.6
bsd.dundermifflin.com.           IN A 100.64.12.7
machinea.dundermifflin.com. 7d   IN CNAME router.dundermifflin.com.
machineb.dundermifflin.com. 7d   IN CNAME dns0.dundermifflin.com.
machinec.dundermifflin.com. 7d   IN CNAME web0.dundermifflin.com.
machined.dundermifflin.com. 7d   IN CNAME web1.dundermifflin.com.
machinee.dundermifflin.com. 7d   IN CNAME nfs.dundermifflin.com.
machinef.dundermifflin.com. 7d   IN CNAME dns1.dundermifflin.com.
machinex.dundermifflin.com. 7d   IN CNAME bsd.dundermifflin.com.
;dundermifflin.com.                  5m  IN CNAME web0.dundermifflin.com. ; CHANGED
THIS ONE
dundermifflin.com.           5m  IN A 100.64.12.3
www.dundermifflin.com.       5m  IN CNAME web0.dundermifflin.com.
www1.dundermifflin.com.      5m  IN CNAME web1.dundermifflin.com.
dns.dundermifflin.com.       5m  IN CNAME dns0.dundermifflin.com.
files.dundermifflin.com.     7d  IN CNAME nfs.dundermifflin.com.
```

db.100.64.12:

```
$TTL 1h
@ IN SOA dns0.dundermifflin.com. loch1722.dundermifflin.com. (
        20231113 ; serial
        1d ; refresh
        1h ; retry
        7d ; expire
        1h ); negative cache
  IN NS dns0.dundermifflin.com.
  IN NS dns1.dundermifflin.com.

1 IN PTR dmz.dundermifflin.com.
2 IN PTR dns0.dundermifflin.com.
3 IN PTR web0.dundermifflin.com.
4 IN PTR web1.dundermifflin.com.
6 IN PTR dns1.dundermifflin.com.
7 IN PTR bsd.dundermifflin.com
```

Db.10.21.32:

```
$TTL 1h
@ IN SOA dns0.dundermifflin.com. loch1722.dundermifflin.com. (
        20231113 ; serial
        1d ; refresh
        1h ; retry
        7d ; expire
        1h ); negative cache
  IN NS dns0.dundermifflin.com.
  IN NS dns1.dundermifflin.com.

1 IN PTR lan.dundermifflin.com.
2 IN PTR nfs.dundermifflin.com.
```

For all of these files, the configuration is pretty self-explanatory, with specifications of SOA and declaring the 2 NS DNS servers. For forward DNS, I found that the CNAME from dundermifflin.com to web0.dundermifflin.com was not valid so I switched it to an A record and replaced web0.* with the IP of web0. Other than that, all A and CNAME records are listed, and reverse DNS records are listed as well respectively above.

DNS1:
First, I went into /etc/bind/named.conf and created the conf file:

```
options {
        listen-on port 53 { any; };
        directory "/var/cache/bind";
        allow-query { any; };
        allow-recursion { localhost; 100.64.12.0/24; 10.21.32.0/24; };
        recursion true;
    allow-transfer { none};
    //allow-update { 100.64.12.2; };
    notify false;
};
include "/etc/bind/named.conf.default-zones";
zone "dundermifflin.com."   IN {type secondary;primaries {100.64.12.2;};file
"/etc/named/db.dm";};
zone "12.64.100.in-addr.arpa"   IN {type secondary;primaries {100.64.12.2;};file
"/etc/named/db.100.64.12";};
zone "32.21.10.in-addr.arpa"    IN {type secondary;primaries {100.64.12.2;};file
"/etc/named/db.10.21.32";};
```

It is very similar to DNS0s config, but I specify the type as secondary and point to the IP where the primary is.

Finally on Machine A, I went into /etc/resolve.conf and changes the name servers to these two DNS servers. I then went into /etc/dhcpd/dhcpd.conf and changed the nameservers to these two DNS servers. I rebooted all machines and was finished.

Time spent on assignment:
8 hours