Domain Name Server Workshop:

Part 1: Installing DNS as caching name server:

Step 1: Install required packages
yum install bind bind-utils bind-chroot -y

Step 2: Backup the bind config file
cp /etc/named.conf ~

Step 3: Configure the bind via the config file
vim /etc/named.conf

Change line 13 to:
listen-on port 53 { any; };

Change line 14 to:
listen-on-v6 port 53 { none; };

Change line 19 to:
allow-query   { any; };

Step 4: Check the bind config file
named-checkconf /etc/named.conf
echo $?

Step 5: Start the service
systemctl restart named
systemctl enable named
systemctl status named

Step 6: open the port 53 on the firewall
firewall-cmd --add-port=53/udp
firewall-cmd --add-port=53/udp --permanent
firewall-cmd --add-port=53/tcp
firewall-cmd --add-port=53/tcp --permanent

Step 7: Configure the dns client file
echo "nameserver 127.0.0.1" > /etc/resolv.conf
lsattr /etc/resolve.conf
chattr +i /etc/resolve.conf
lsattr /etc/resolve.conf

Step 8: Check if it works
dig www.anisa.co.ir
Check Bellow:
...
;; Query time: 1036 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
...

Retry:
dig www.anisa.co.ir

...
;; Query time: 0 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
...

Step 9: Running in chrooted environment:
ln -s /etc/named.conf /var/named/chroot/etc/named
systemctl restart named

Step 10: Remove Bind-chroot (if already installed)
This is for academic propose!
systemctl stop named
rpm -e bind-chroot
systemctl start named

Part 2: Installing DNS as master server:

Step 1: Install bind if it is not already installed
yum install bind

Step 2: Backup the bind config file
cp /etc/named.conf ~

Step 3: Step 3: Configure the bind config file
vim /etc/named.conf

change line 13 to:
listen-on port 53 { any; };

change line 14 to:
listen-on-v6 port 53 { none; };

change line 19 to:
allow-query   { any; };

change line 31 to:
recursion no;

add the below at the end:
zone "lpir.org" {
type master;
file "lpir.org.db";
};

Step 4: create the zone file "/var/named/lpir.org.db" as below
$TTL 1D
lpir.org.   IN SOA ns1.lpir.org. admin.lpir.org. (
                                        0   ; serial
                                        1D   ; refresh
                                        1H   ; retry
                                        1W   ; expire
                                        3H)   ; minimum
        NS   @

```
              A      192.168.1.10
              AAAA   ::1
www       IN A    192.168.1.10
ftp       IN A    192.168.1.100
myftp     IN CNAME ftp.lpir.org.
ns1       IN A    192.168.1.10
```

Step 5: Reload the named service
systemctl restart named

Step 6: Test the results
dig @127.0.0.1 www.lpir.org
dig @127.0.0.1 ftp.lpir.org
dig @127.0.0.1 myftp.lpir.org
dig @127.0.0.1 lpir.org

Part 3: Master/Slave

Step 1: Install bind master/slave.
Step 2: Update master /etc/named.conf file as:

```
options {
directory "/var/named";
};

zone "lpir.org" {
type master;
file "lpir.org.db";
allow-transfer { Slave_IP; };
};
```

Tip: allow-transfer will allow slaves to get all zone information. It should address each slave as an IP address.
Step 3: Update slave /etc/named.conf file as:

```
options {
directory "/var/named";
};

zone "lpir.org" {
type slave;
masters { Master_IP ; };
file "lpir.org.slave" ;
};
```

Step 4: Slave should have write permission to /var/named directory to create zone file.
chmod g+w /var/named/

Step 5: Restart both master/slave (or reload the config.)
[Master]# service named reload
[Slave]# service named reload

Step 6: Test slave:
dig @127.0.0.1 www.lpir.org
ls /var/named
Tip: file slave must be created and have the same values from the master file

Part 4: Forwarder server

Step 1: Create the master server as above
Step 2: Create forwarder server as bellow:

```
options {
directory "/var/named";
};

zone "lpir.org" {
type forward;
forwarders {Master_IP; };
forward only;
};
```

Step3: Check the master server 1st:
dig @<ip master server> www.lpir.org

Step4: Check the forwarder server:
dig @<ip forward server> www.yahoo.com

Step5: Forward all domains to a trusted dns server:

```
zone "." {
type forward;
forwarders { 8.8.8.8 ; };
forward only;
};
```

Part 5: Create Reverse zone on Master

Step 1:
Add the below content on /etc/named.conf

```
zone "1.168.192.in-addr.arpa" IN {
type master;
File "1.168.192.in-addr.arpa";
};
```

Step 2:
Create the /var/named/1.168.192.in-addr.arpa with below content:

```
$TTL    86400
@               IN SOA  1.168.192.in-addr.arpa.      root.mehdi.org. (
                                        42              ; serial (d. adams)
                                        3H              ; refresh
                                        15M             ; retry
                                        1W              ; expiry
                                        1D )            ; minimum
                                        IN   NS ns1.lpir.org.
10                                      IN   PTR www.lpir.org.
100                                     IN   PTR ftp.lpir.org.
```

Step 3: Now test the results
nslookup 192.168.1.10
nslookup 192.168.1.100

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Good Luck.