Advanced Computer Networking & Security Lab Report : 7- DNS in a box

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```
Step:1:Initiate docker

Creating edu-10.9.0.60 ... done
Creating local-dns-10.9.0.53 ... done
Creating root-10.9.0.30 ... done
Creating example-edu-10.9.0.65 ... done
Creating seed-base-bind ... done
[10/21/21]seed@VM:~/.../Labsetup$
```

Step 2 : executing dig command to check the server

```
[10/21/21]seed@VM:~/.../Labsetup$ dig @10.9.0.65 www.example.edu
; <<>> DiG 9.16.1-Ubuntu <<>> @10.9.0.65 www.example.edu
: (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, 1d: 44040
;; flags: qr aa rd; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
;; WARNING: recursion requested but not available
:: OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
; COOKIE: 2178dcbdb5dadfbc01000000617157ce80a1bed2b4aa6bd0 (good)
:: QUESTION SECTION:
                                 IN
;www.example.edu.
                                         Α
:: ANSWER SECTION:
www.example.edu. 259200 IN A 1.2.3.5
```

Step 3: Now checking with abc.example.edu

```
Q = - 0
                                   seed@VM: -/../Labsetup
:: MSG SIZE rcvd: 88
[10/21/21]seed@VM:-/.../Labsetup$ dig @10.9.0.65 abc.example.edu
; <<>> DiG 9.16.1-Ubuntu <<>> @10.9.0.65 abc.example.edu
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, 1d: 2483
;; flags: qr aa rd; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
;; WARNING: recursion requested but not available
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
; COOKIE: 3eb45113e044bda101000000617158318cf78a46ab6d0c51 (good)
:: OUESTION SECTION:
:abc.example.edu.
                                IN
;; ANSWER SECTION:
abc.example.edu.
                        259200 IN
                                                1.2.3.7
                                        Δ
```

Step 4 : <u>Turning off the docker</u>

```
[10/21/21]seed@VM:-/.../Labsetup$ docker-compose down
Stopping example-edu-10.9.0.65 ... done
                               ... done
Stopping root-10.9.0.30
                               ... done
Stopping local-dns-10.9.0.53
                               ... done
Stopping edu-10.9.0.60
WARNING: Found orphan containers (oracle-10.9.0.80, www-10.9.0.80) for this projec

    If you removed or renamed this service in your compose file, you can run this c

ommand with the --remove-orphans flag to clean it up.
                               · · · done
Removing seed-base-bind
Removing example-edu-10.9.0.65 ... done
Removing root-10.9.0.30
Removing local-dns-10.9.0.53
                               ... done
Removing edu-10.9.0.60
                               ... done
Removing network labsetup default
Removing network seed-net
```

```
thums 4.con/trendishe
                                                                       edu.db
                     2008111001
 4
                     8H
 5
                     2H
 6
                     4W
 7
                     ID)
 8
 9; Records for this nameserver (you need to make changes)
                              IN
                                       NS.
                                            a.tld-edu-servers.edu.
100
lla.tld-edu-servers.edu.
                              IN
                                       A
                                             10.9.0.60
12
13
14; Real records for syr.edu
                                       NS
15 syr.edu.
                                             nsl.syr.edu.
                              IN
16 nsl.syr.edu.
                                            128.230.12.8
17
18; Add records in the following
19 syr.edu.
                              TN
                                       NS
                                             nsl.syr.edu.
20 nsl.syr.edu.
                             IN
                                     A 128.230.12.8
21
Loading File "thume/seed/LABS/Lab 7/Lab setup/names erver/edu/edu/idb"... Plato Text * Tab Width: 8 * Ln 20, Col 50 * IN6.
```

```
[10/21/21]seed@VM:-/.../Labsetup$ dig ucmo.edu NS
; <<>> DiG 9.16.1-Ubuntu <<>> ucmo.edu NS
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 5543
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;ucmo.edu.
                                         NS
;; ANSWER SECTION:
                         5
                                IN
ucmo.edu.
                                         NS
                                                 nsl.ucmo.edu.
ucmo.edu.
                         5
                                 IN
                                         NS
                                                 ns2.ucmo.edu.
;; Query time: 63 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Thu Oct 21 08:27:31 EDT 2021
```

```
edu.db
                   *uamed.conf.seedlabs
                    2008111001
 5
                    2H
                    4W
 6
 7
                    10)
 9; Records for this nameserver (you need to make changes)
                                      NS
                                          a.tld-edu-servers.edu.
10@
                             IN
11 a.tld-edu-servers.edu. IN
                                      A
                                           10.9.0.60
12
13
14; Real records for syr.edu
15 syr.edu.
                                      NS.
                             IN
                                           nsl.syr.edu.
16 nsl.syr.edu.
                             IN
                                           128.230.12.8
                                      A
18; Add records in the following
                                      NS
19 syr.edu.
                             IN
                                           ns2.ucmo.edu.
                   IN A 128.230.12.8
20 ns2.ucmo.edu.
Smingfile"/home/seed/LABS/Lab7/Labsetus/nameserver/edu/edu.db"...
                                                                            Ln 20, Cul 14 + INS
                                                       Plain Text * Tab Width # *
```

Step 8

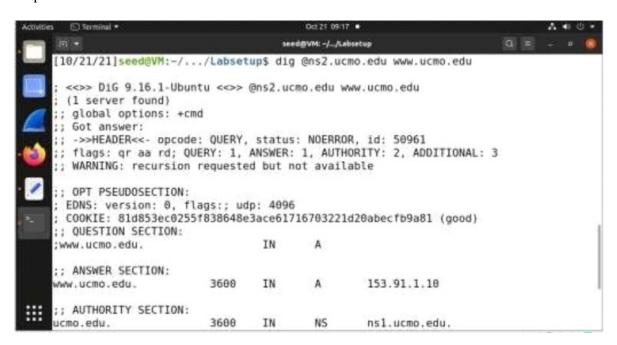
```
Q = - P 0
                                        seed@VM: -/.../Labsetup
; <<>> DiG 9.16.1-Ubuntu <<>> ns2.ucmo.edu
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 33810
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;ns2.ucmo.edu.
                                             A
;; ANSWER SECTION:
ns2.ucmo.edu.
                           5
                                                      153.91.1.52
                                    IN
                                             A
;; Query time: 75 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Thu Oct 21 08:32:04 EDT 2021
;; MSG SIZE rcvd: 57
```

```
*edu.db
                 Inumostrantakedlaks
                                                               *ede.db
                  2008111001
 4
                  8H
                  2H
 5
 6
                   4W
 7
                  1D)
 8
 9; Records for this nameserver (you need to make changes)
10@
                          IN
                                  NS a.tld-edu-servers.edu.
                                        10.9.0.60
11 a.tld-edu-servers.edu.
                          IN
                                   A
12
13
14; Real records for syr.edu
15 syr.edu.
                                   NS.
                                        ns1.syr.edu.
                          IN
16 nsl.syr.edu.
                                       128.230.12.8
                                   A
17
18; Add records in the following
19 ucmo.edu
                IN
                                  NS ns2.ucmo.edu.
                                        153.91.1.52
20 ns2.ucmo.edu.
                           IN
                                   A
21
```

```
A .
                                   seed@VM: =/.../Labsetup
                                                                     Q = - = 0
Creating example-edu-10.9.0.65 ... done
[10/21/21]seed@VM:-/.../Labsetup$ dig @10.9.0.60 www.example.edu
; <>> DiG 9.16.1-Ubuntu <>> @10.9.0.60 www.example.edu
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 51220
;; flags: gr aa rd; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1
;; WARNING: recursion requested but not available
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
; COOKIE: 82453d3967b86e31010000006171605eeee42b64c1474e56 (good)
:: QUESTION SECTION:
;www.example.edu.
                                IN
;; AUTHORITY SECTION:
edu.
                        3680
                                IN
                                        SOA
                                                a.tld-edu-servers.edu. admin.tld-e
du-servers.edu. 2008111001 28800 7200 2419200 86400
```

```
seed@VM: -/.../Labsetup
                                                                      Q E -
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 2
;; WARNING: recursion requested but not available
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
; COOKIE: 0dfc1d2fa3928e2a01000000617166530d24c2b4e572289d (good)
:: QUESTION SECTION:
;www.ucmo.edu.
                                IN
;; AUTHORITY SECTION:
                        3600
ucmo.edu.
                                IN
                                        NS
                                                ns2.ucmo.edu.
;; ADDITIONAL SECTION:
                                IN
                        3600
                                         A
                                               153.91.1.52
ns2.ucmo.edu.
;; Query time: 4 msec
;; SERVER: 10.9.0.60#53(10.9.0.60)
;; WHEN: Thu Oct 21 09:08:35 EDT 2021
;; MSG SIZE rcvd: 103
```

```
seed@VM: -/../Labsetup
                                                                    日章 - 8 (
[18/21/21]seed@VM:~/.../Labsetup$ dig @ns2.ucmo.edu www.ucmo.edu
; <<>> DiG 9.16.1-Ubuntu <<>> @ns2.ucmo.edu www.ucmo.edu
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 50961
;; flags: qr aa rd; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 3
;; WARNING: recursion requested but not available
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
; COOKIE: 81d853ec0255f838648e3ace61716703221d20abecfb9a81 (good)
:: QUESTION SECTION:
; www.ucmo.edu.
                               IN
                                       Α
;; ANSWER SECTION:
www.ucmo.edu.
                        3600
                               IN
                                      A
                                               153.91.1.10
;; AUTHORITY SECTION:
                        3600
                               IN NS nsl.ucmo.edu.
ucmo.edu.
```



```
    Text Editor ▼

                                            eduidb
                                                                          See E
           *nemedianEmpilaba
                                              db.ube
                                                                        db.ubs.aligmuse
 9; Records for this nameserver (you need to make changes)
10@
                                     NS
                                           a.tld-edu-servers.edu.
                             IN
11 a.tld-edu-servers.edu.
                                      A
                                           10.9.0.60
12
13
14; Real records for syr.edu
15 syr.edu.
                                      NS
                             IN
                                           nsl.syr.edu.
                                           128.230.12.8
16 nsl.syr.edu.
                                      A
18; Add records in the following
19 ucmo.edu.
                                      NS
                             IN
                                           ns2.ucmo.edu.
20 ns2.ucma.edu.
                             IN
                                      A
                                           153.91.1.52
21
22 example.edu.
                             IN
                                      NS
                                           ns.example.edu.
23 ns.example.edu.
                             IN
                                     A
                                           10.9.0.65
24
25
```

Step 15 Adding domains

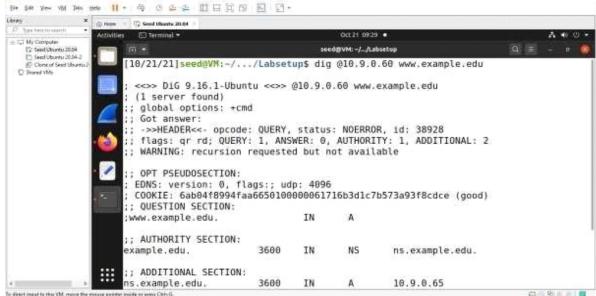
named.conf.sendlahs = namen	LconCseedlabs =	*edu.d	b = mhit.edu.db = reet.db =	named.cunf -	rmsthints -
15 syr.edu.	IN	NS	nsl.syr.edu.		
16 nsl.syr.edu. 17	IN	A	128.230.12.8		
18; Add records in th	e following				
19 ucmo.edu.	IN	NS	ns2.ucmo.edu.		
20 ns2.ucmo.edu, 21	IN	Α	153.91.1.52		
22 escc.edu.	IN	NS	nsccdcdmz19.nscc.edu.		
23 nsccdcdmz19.nscc.ed 24	u. IN	Α	198.146.64.120		
25 ua.edu.	IN	NS	ext-dns3.ua.edu.		
26 ext-dns3.ua.edu.	IN	A	130.160.0.150		
27					
28 example.edu.	IN	NS	ns.example.edu.		
29 ns.example.edu. 30	IN	A	10.9.0.65		

Step 16 Check for ua.edu

```
<<>> DiG 9.16.1-Ubuntu <<>> @10.9.0.60 www.ua.edu
(1 server found)
  global options: +cmd
   Got answer:
->>HEADER<<- opcode: QUERY, status: NOERROR, id: 34496
flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 2
WARNING: recursion requested but not available
    OPT PSEUDOSECTION:
  EDNS: version: 0, flags:; udp: 4096
COOKIE: e30cb58f83e2e9130100000061718c4e8148292369f2068c (good)
: QUESTION SECTION:
;www.ua.edu.
                                                  IN
;; AUTHORITY SECTION:
ua.edu.
                                     3600
                                                  IN
                                                              NS
                                                                           ext-dns3.ua.edu.
;; ADDITIONAL SECTION:
ext-dns3.ua.edu.
                                     3600
                                                  IN
                                                              A
                                                                          130.160.0.150
```

Step 17 Changing in root file

```
root.db
  Open - Ft
     *panodasefacedabs
                                                                                        db.toos
                             side, db
                                                                named about used abo
                                            example adults
 1 STTL 3D
                     SOA
 2 .
            IN
                             root.seed.net. admin.see.net. (
                     2008111001
 3
 4
                     8H
 5
                     2H
 6
                     4W
 7
                     10)
 8
            IN
                     NS.
                              a.root-seed.net.
 9
10; The following information is from the real-world DNS system
11 com.
           IN
                     NS
                              a.gtld-servers.net.
12 net.
            IN
                     NS
                              a.gtld-servers.net.
13 a.gtld-servers.net.
                              IN
                                        A
                                                 192.5.6.30
14
15; Add records in the following
                                        IN
                                                 NS
                                                              a.tld-edu-servers.edu.
                                                 NS
17 a.tld-edu-servers.edu.
                                        IN
                                                              10.9.0.60
🗊 Seed Ubuntu 20.04 - Whose Workstation
```



Step 18 dig uk NS

```
ctivities ( Terminal *
                                                   Oct 21 09:58 •
                                               seed@VM: -/.../Labsetup
    [10/21/21]seed@VM:-/.../Labsetup$ dig uk NS
      <>>> DiG 9.16.1-Ubuntu <<>> uk NS
    ;; global options: +cmd
    ;; Got answer:
    ;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 14841
;; flags: qr rd ra; QUERY: 1, ANSWER: 8, AUTHORITY: 0, ADDITIONAL: 1
    ;; OPT PSEUDOSECTION:
    ; EDNS: version: 0, flags:; udp: 65494
    ;; QUESTION SECTION:
    ;uk.
                                           IN
                                                     NS
    ;; ANSWER SECTION:
    uk.
                                           IN
                                                     NS
                                                               nsa,nic.uk.
                                 5
    uk.
                                           IN
                                                     NS
                                                              nsb.nic.uk.
    uk.
                                 5
                                           IN
                                                     NS
                                                              nsc.nic.uk.
                                 5
                                           IN
                                                     NS
                                                               nsd.nic.uk.
    uk.
    uk.
                                 5
                                           IN
                                                     NS
                                                               dnsl.nic.uk.
    uk.
                                           IN
                                                     NS.
                                                               dns2.nic.uk.
```

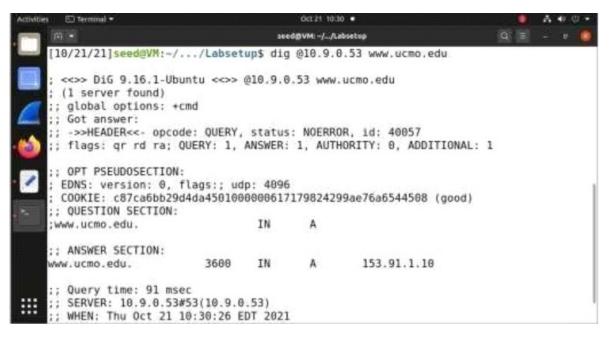
Step 19 Adding canada

Open •				-risker/centra	*reet.db		Save E	- n	
namedium	Expediales =	namedan	nCsewillabs -	whith	refilt.edu.dle	*root.db -	namediunf	rmet.hints	
b		4W							
7		10)							
8	IN	NS	a.root	-seed.ne	et.				
9									
0; The	followi	ng infor	mation is	from t	he real-wor	ld DNS syst	em		
ll com.	IN	NS	a.gtlo	-server	s.net.				
12 net.	IN	NS	a.gtld	-server	s.net.				
13 a.gtld-servers.net. IN		A	A 192.5.6.30						
14									
15 ; Add	records	in the	following	1					
16 edu.			IN	NS	a.tld-edu-servers.edu.				
17 a.tld-edu-servers.edu.			IN	A	10.9.0.60				
18									
19 uk.				IN	NS	nsb.nic.u	ik.		
20 nsb.nic.uk.			IN	A	156.154.1	156.154.101.3			
21									
22 ca.				IN	NS	c.ca-serv	ers.ca.		
23 c.ca-servers.ca.				IN	NS	185.159.1	185.159.196.2		
A.C						A STANCE OF STANCE			

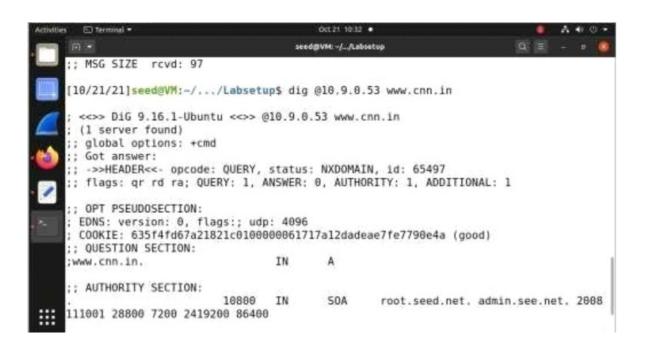
Task 5



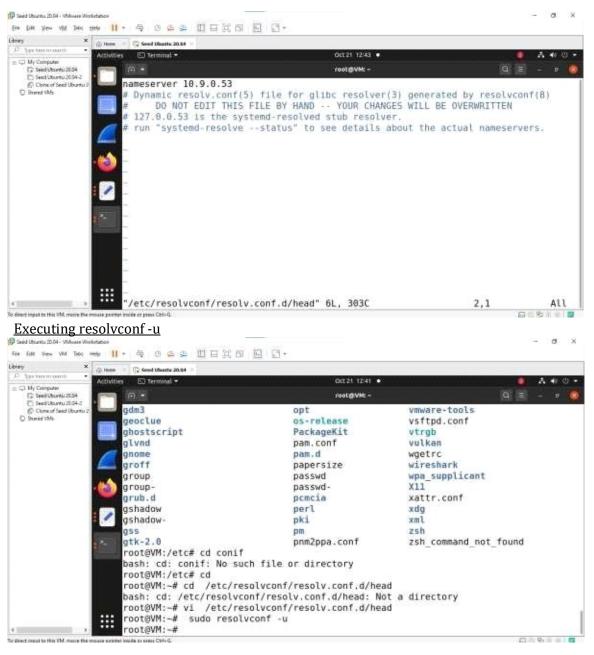
```
Oct 21 10:30 ·
                                       seedBVM:-/../Labsetup
    [10/21/21]seed@VM:-/.../Labsetup$ dig @10.9.0.53 www.example.edu
    ; <<>> DiG 9.16.1-Ubuntu <<>> @10.9.0.53 www.example.edu
    ; (1 server found)
    ;; global options: +cmd
    ;; Got answer:
    ;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 15114
    ;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
    :: OPT PSEUDOSECTION:
    ; EDNS: version: 0, flags:; udp: 4896
    ; COOKIE: c6991f0e4453b7dd010000006171795b3116b7a96628e324 (good)
    ;; QUESTION SECTION:
    ;www.example.edu.
                                    IN
                                           A
    :: ANSWER SECTION:
                                                  1.2.3.5
    www.example.edu.
                            259200 IN A
    ;; Query time: 28 msec
    ;; SERVER: 10.9.0.53#53(10.9.0.53)
    :: WHEN: Thu Oct 21 10:29:47 EDT 2021
```



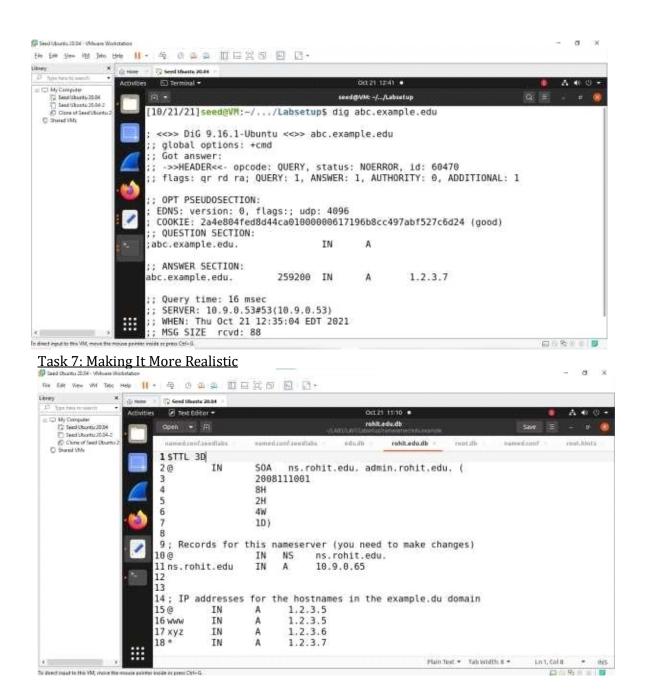
```
Oct 21 10:32 •
Activities 🖸 Terminal 🕶
                                                                           Q = #
                                        seed@VM: -/_/Labsetup
    ;; MSG SIZE rcvd: 85
    [10/21/21]seed@VM:-/.../Labsetup$ dig @10.9.0.53 www.cnn.uk
    ; <<>> DiG 9.16.1-Ubuntu <<>> @10.9.0.53 www.cnn.uk
    ; (1 server found)
    ;; global options: +cmd
    ;; Got answer:
    ;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 38390
    ;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1
    :: OPT PSEUDOSECTION:
    ; EDNS: version: 0, flags:; udp: 4096
    ; COOKIE: d37f731122be464001000000617179d65e8d2e0876bd4678 (good)
    ;; QUESTION SECTION:
    ;www.cnn.uk.
                                     IN
    :: ANSWER SECTION:
                             14400
                                             CNAME cnn.uk.
                                     IN
    www.cnn.uk.
    cnn.uk.
                             14400
                                     IN
                                                     89.187.86.205
```

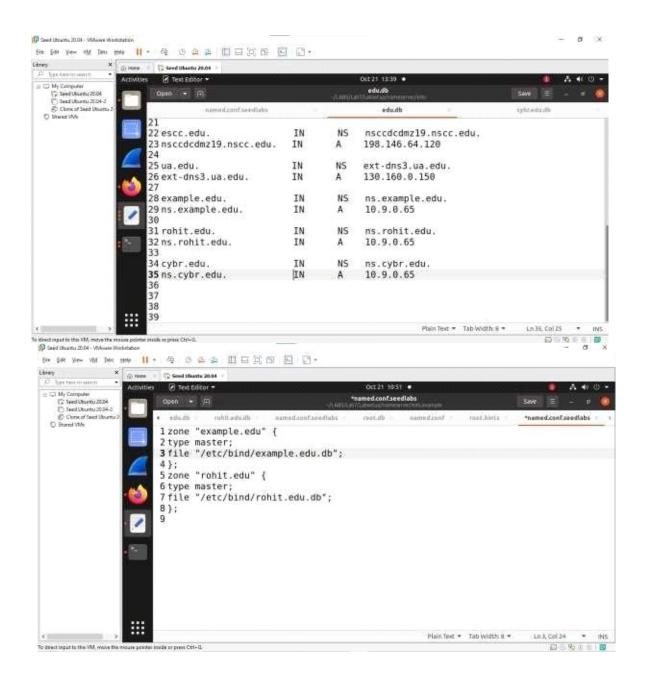


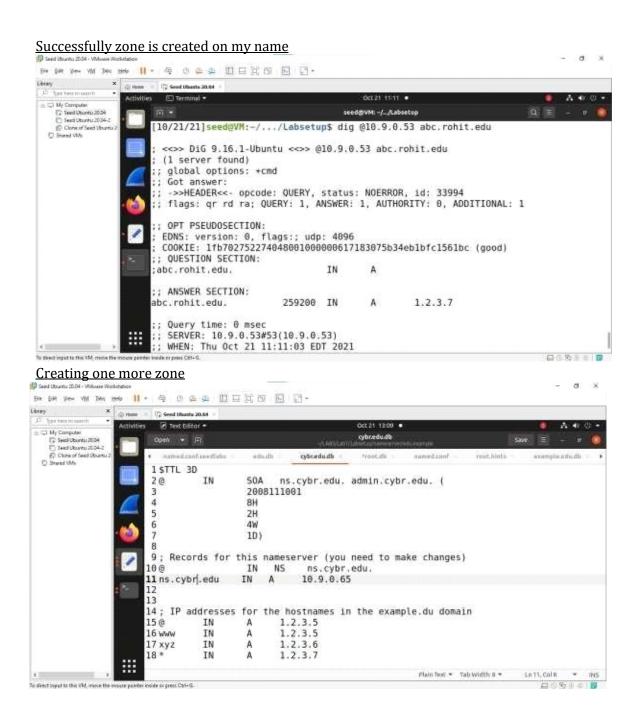
Task 6: Configure our VM to use this local DNS server



Successfully removed the ip address and checked using dig









;; Query time: 4 msec ;; SERVER: 10.9.0.53#53(10.9.0.53) ;; WHEN: Thu Oct 21 13:50:50 EDT 2021

0 5 6 B B