

DevOps Internship

-Exercițiul 1-

1. Pentru rezolvarea acestui exercițiu, am instalat Docker Desktop.

Am rulat în terminal comanda ***docker run -it ubuntu***.

```
PS C:\Users\Gabriela> docker run -it ubuntu
root@63e38982516d:/# ping cloudflare.com
bash: ping: command not found
```

Pentru a găsi IP-ul de la cloudflare.com am instalat ping folosind comanda ***apt-get install -y iputils-ping***.

```
root@63e38982516d:/# apt update
apt install iputils-ping
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1065 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [21.9 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [331 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [1024 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [19.3 MB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [897 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble/restricted amd64 Packages [117 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [1112 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1358 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [26.4 kB]
Get:16 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1242 kB]
Get:17 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [30.9 kB]
Get:18 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Packages [48.0 kB]
Fetched 29.0 MB in 25s (1168 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
18 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
```

După finalizarea comenzii, am rulat comanda ***ping cloudflare.com*** ca să aflu adresa IP. În urma comenzii rulate am aflat adresa IP care este: 188.114.96.8

```
root@63e38982516d:/# ping cloudflare.com
PING cloudflare.com (188.114.96.8) 56(84) bytes of data.
64 bytes from 188.114.96.8: icmp_seq=1 ttl=63 time=27.2 ms
64 bytes from 188.114.96.8: icmp_seq=2 ttl=63 time=14.8 ms
64 bytes from 188.114.96.8: icmp_seq=3 ttl=63 time=13.1 ms
```

Pentru cerința următoare am instalat comanda **nano** pentru a putea pune google-dns pe 8.8.8.8

```
root@63e38982516d:/# apt update
apt install nano
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
17 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
  hunspell
The following NEW packages will be installed:
  nano
0 upgraded, 1 newly installed, 0 to remove and 17 not upgraded.
Need to get 282 kB of archives.
After this operation, 856 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 nano amd64 7.2-2ubuntu0.1 [282 kB]
Fetched 282 kB in 0s (593 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package nano.
(Reading database ... 4415 files and directories currently installed.)
Preparing to unpack .../nano_7.2-2ubuntu0.1_amd64.deb ...
Unpacking nano (7.2-2ubuntu0.1) ...
```

Am accesat fișierul folosind comanda **nano /etc/hosts** și am adăugat linia 8.8.8.8 google-dns.

```
GNU nano 7.2 /etc/hosts
127.0.0.1 localhost
::1 localhost ip6-localhost ip6-loopback
fe00:: ip6-localnet
ff00:: ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
172.17.0.2 63e38982516d

[ Read 7 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo      M-A Set Mark
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify    ^_ Go To Line M-E Redo      M-6 Copy
```

```
GNU nano 7.2 /etc/hosts
127.0.0.1 localhost
::1 localhost ip6-localhost ip6-loopback
fe00:: ip6-localnet
ff00:: ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
172.17.0.2 63e38982516d
8.8.8.8 google-dns
```

Am verificat că google-dns a fost pus pe portul 8.8.8.8 folosind comanda ***ping google-dns***.

```
root@63e38982516d:/# ping google-dns
PING google-dns (8.8.8.8) 56(84) bytes of data.
64 bytes from google-dns (8.8.8.8): icmp_seq=1 ttl=63 time=41.3 ms
64 bytes from google-dns (8.8.8.8): icmp_seq=2 ttl=63 time=49.2 ms
64 bytes from google-dns (8.8.8.8): icmp_seq=3 ttl=63 time=42.4 ms
^C
--- google-dns ping statistics ---
```

Pentru DNS portul este 53 de care ne vom folosi pentru a rezolva cerința următoare.

Am instalat comanda nmap folosind următoarele comenzi:

apt update

apt install nmap

Mai departe am introdus comanda de mai jos ca să verific dacă Portul DNS este deschis pentru google:

```
Setting up dbus-systemd (1.14.10-4ubuntu4.1) ...
Setting up dbus-daemon (1.14.10-4ubuntu4.1) ...
Setting up liblinear4:amd64 (2.3.0+dfsg-5build1) ...
Setting up libnl-route-3-200:amd64 (3.7.0-0.3build1.1) ...
Setting up dbus (1.14.10-4ubuntu4.1) ...
Setting up libibverbs1:amd64 (50.0-2build2) ...
Setting up ibverbs-providers:amd64 (50.0-2build2) ...
Setting up libpcap0.8t64:amd64 (1.10.4-4.1ubuntu3) ...
Setting up nmap (7.94+git20230807.3be01efb1+dfsg-3build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.3) ...
root@63e38982516d:/# nmap -p 53 8.8.8.8
Starting Nmap 7.94SVN ( https://nmap.org ) at 2025-03-31 22:28 UTC
Nmap scan report for google-dns (8.8.8.8)
Host is up (0.0030s latency).

PORT      STATE SERVICE
53/tcp    open  domain

Nmap done: 1 IP address (1 host up) scanned in 0.34 seconds
root@63e38982516d:/#
```

La pasul următor am accesat fișierul resolv.conf prin următoarea comandă:

```
PORT    STATE SERVICE
53/tcp  open  domain

Nmap done: 1 IP address (1 host up) scanned in 0.34 seconds
root@63e38982516d:/# nano /etc/resolv.conf
```

Pe linia cu nameserver vom înlocui 192.168.65.7 cu 8.8.8.8

```
GNU nano 7.2 /etc/resolv.conf
# Generated by Docker Engine.
# This file can be edited; Docker Engine will not make further changes once it
# has been modified.

nameserver 192.168.65.7

# Based on host file: '/etc/resolv.conf' (legacy)
# Overrides: []

[ Read 8 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo      M-A Set Mark
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo      M-G Copy
```

```
Written by Torbjorn Granlund and Richard M. Stallman.
root@63e38982516d:/# cat /etc/resolv.conf
# Generated by Docker Engine.
# This file can be edited; Docker Engine will not make further changes once it
# has been modified.

nameserver 8.8.8.8

# Based on host file: '/etc/resolv.conf' (legacy)
# Overrides: []
root@63e38982516d:/#
```

Se poate vedea în poza de mai sus că fișierul resolv.conf a fost modificat.

Folosind comanda din poza următoare am obținut adresele IP asociate cu domeniul cloudfare.com:

```
root@63e38982516d:/# nslookup cloudfare.com
Server:      8.8.8.8
Address:     8.8.8.8#53

Non-authoritative answer:
Name:   cloudfare.com
Address: 188.114.96.8
Name:   cloudfare.com
Address: 188.114.97.8
Name:   cloudfare.com
Address: 2a06:98c1:3120::8
Name:   cloudfare.com
Address: 2a06:98c1:3121::8

root@63e38982516d:/#
```

Se poate observa că adresa IP obținută după ultima comandă este identică cu adresa IP pe care am obținut-o la începutul exercițiului.

Indiferent de serverul DNS, rezultatul ar trebui să fie identic.

Pentru instalarea Nginx am folosit comenzile: **apt update** și **apt install nginx**.

Am pornit serviciul și am verificat dacă acesta funcționează.

```
root@63e38982516d:/# service nginx start
* Starting nginx nginx
root@63e38982516d:/#
```

```
root@63e38982516d:/# service nginx start
* Starting nginx nginx
root@63e38982516d:/# service nginx status
* nginx is running
root@63e38982516d:/#
```

Prin comanda nano /etc/nginx/nginx.conf am accesat putut vizualiza conținutul fișierului.

```
GNU nano 7.2 /etc/nginx/nginx.conf
# Gzip Settings
##

gzip on;

# gzip_vary on;
# gzip_proxied any;
# gzip_comp_level 6;
# gzip_buffers 16 8k;
# gzip_http_version 1.1;
# gzip_types text/plain text/css application/json application/javascript text/xml application/xml application/x

##
# Virtual Host Configs
##

include /etc/nginx/conf.d/*.conf;
include /etc/nginx/sites-enabled/*;
}

#mail {
#
# See sample authentication script at:
# http://wiki.nginx.org/ImapAuthenticateWithApachePhpScript
#
#
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location  M-U Undo     M-A Set Mark
^X Exit      ^R Read File ^_ Replace   ^U Paste     ^J Justify   ^/_ Go To Line M-E Redo     M-G Copy
```

```
root@63e38982516d:/# nano /etc/nginx/sites-available/default
root@63e38982516d:/#
```

```
##
# You should look at the following URL's in order to grasp a solid understanding
# of Nginx configuration files in order to fully unleash the power of Nginx.
# https://www.nginx.com/resources/wiki/start/
# https://www.nginx.com/resources/wiki/start/topics/tutorials/config_pitfalls/
# https://wiki.debian.org/Nginx/DirectoryStructure
#
# In most cases, administrators will remove this file from sites-enabled/ and
# leave it as reference inside of sites-available where it will continue to be
# updated by the nginx packaging team.
#
# This file will automatically load configuration files provided by other
# applications, such as Drupal or Wordpress. These applications will be made
# available underneath a path with that package name, such as /drupal8.
#
# Please see /usr/share/doc/nginx-doc/examples/ for more detailed examples.
##

# Default server configuration
#
server {
    listen 80 default_server;
    listen [::]:80 default_server;

    # SSL configuration
    #
    # Read 91 lines
    ^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location  M-U Undo     M-A Set Mark
    ^X Exit      ^R Read File ^_ Replace   ^U Paste     ^J Justify   ^/_ Go To Line M-E Redo     M-G Copy
```

```

Unpacking net-tools (2.10-0.1ubuntu4) ...
Setting up net-tools (2.10-0.1ubuntu4) ...
root@63e38982516d:/# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.0.2 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 9e:cc:90:76:00:8d txqueuelen 0 (Ethernet)
    RX packets 59729 bytes 85165036 (85.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 20711 bytes 1387672 (1.3 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@63e38982516d:/# |

```

Am rulat comanda **service nginx restart**, apoi am folosit comanda **nmap 172.17.0.2** pentru a vedea dacă portul 8080 este activ.

```

root@63e38982516d:/# nmap 172.17.0.2
Starting Nmap 7.94SVN ( https://nmap.org ) at 2025-04-01 16:43 EEST
Nmap scan report for 63e38982516d (172.17.0.2)
Host is up (0.0000010s latency).
Not shown: 999 closed tcp ports (reset)
PORT      STATE SERVICE
8080/tcp  open  http-proxy

Nmap done: 1 IP address (1 host up) scanned in 0.20 seconds
root@63e38982516d:/# |

```

Pentru ultimul pas am deschis fișierul index.html cu comanda nano:

nano /usr/share/nginx/html/index.html și am modificat titlul cu mesajul din document.

```

GNU nano 7.2 /usr/share/nginx/html/index.html *
<!DOCTYPE html>
<html>
<head>
<title>I have completed the Linux part of the DevOps internship project</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>

[ Cancelled ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify
^C Location  ^_ Go To Line ^U Undo       ^-A Set Mark
^M-E Redo    ^M-G Copy

```