

Networking Assignment

1. To find the ip of a domain:
Cmd: nslookup google.com
2. To find router ip assigned by the ISP:
Cmd: ip r
3. To find the private ip of host machine:
Cmd: curl ipinfo.io
4. To change private ip of ubuntu machine:
Cmd: cd /etc/netplan
ls (views the config yaml file named 01-network-manager-all.yaml)
Edit the content of the yaml file to include the new private ip.
Cmd: sudo netplan apply
ifconfig (to check if the changes have been applied)
If enp0s8 info is not shown, we have to configure our ubuntu VM:
Settings -> Network -> Adapter2 -> Attach to: Host-only Adapter
5. Check ports that are open in the current system:

```
raisavbox@Ubuntu:~$ netstat -tuln
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 127.0.0.1:631            0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.53:53            0.0.0.0:*               LISTEN
tcp6       0      0 :::1:631                 :::*                    LISTEN
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 0.0.0.0:37799            0.0.0.0:*
udp        0      0 127.0.0.53:53            0.0.0.0:*
udp        0      0 0.0.0.0:5353             0.0.0.0:*
udp6       0      0 :::54114                 :::*
udp6       0      0 :::5353                  :::*
```

6. Enable port 80 and 3306 in VM:

```
raisavbox@Ubuntu:~$ sudo ufw allow 80
[sudo] password for raisavbox:
Rules updated
Rules updated (v6)
raisavbox@Ubuntu:~$ sudo ufw allow 3306
Rules updated
Rules updated (v6)
```

```

raisavbox@Ubuntu:~$ sudo ufw status
Status: inactive
raisavbox@Ubuntu:~$ sudo ufw enable
Firewall is active and enabled on system startup
raisavbox@Ubuntu:~$ sudo ufw status
Status: active

To Action From
--
80 ALLOW Anywhere
3306 ALLOW Anywhere
80 (v6) ALLOW Anywhere (v6)
3306 (v6) ALLOW Anywhere (v6)

```

7. To download any file/software using terminal:

```

raisavbox@Ubuntu:~$ wget https://nicepage.com/ht/6003642/beauty-salon-gallery-html-template#
--2023-12-16 03:33:00-- https://nicepage.com/ht/6003642/beauty-salon-gallery-html-template
Resolving nicepage.com (nicepage.com)... 85.17.54.85
Connecting to nicepage.com (nicepage.com)|85.17.54.85|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 141616 (138K) [text/html]
Saving to: 'beauty-salon-gallery-html-template'

beauty-salon-galler 100%[=====>] 138.30K 248KB/s in 0.6s

2023-12-16 03:33:01 (248 KB/s) - 'beauty-salon-gallery-html-template' saved [141616/141616]

raisavbox@Ubuntu:~$ ls
beauty-salon-gallery-html-template  Documents  Pictures  Templates
crash.in                           Downloads  Public    test_dir
Desktop                             Music      snap      Videos

```

8. To get web data response from terminal:

```

raisavbox@Ubuntu:~$ curl google.com
<HTML><HEAD><meta http-equiv="content-type" content="text/html; charset=utf-8">
<TITLE>301 Moved</TITLE></HEAD><BODY>
<H1>301 Moved</H1>
The document has moved
<A HREF="http://www.google.com/">here</A>.
</BODY></HTML>

```

9. To install nginx web server in the vm and access the welcome nginx page from web browser:

First we need to update all available packages -

Cmd: sudo apt update

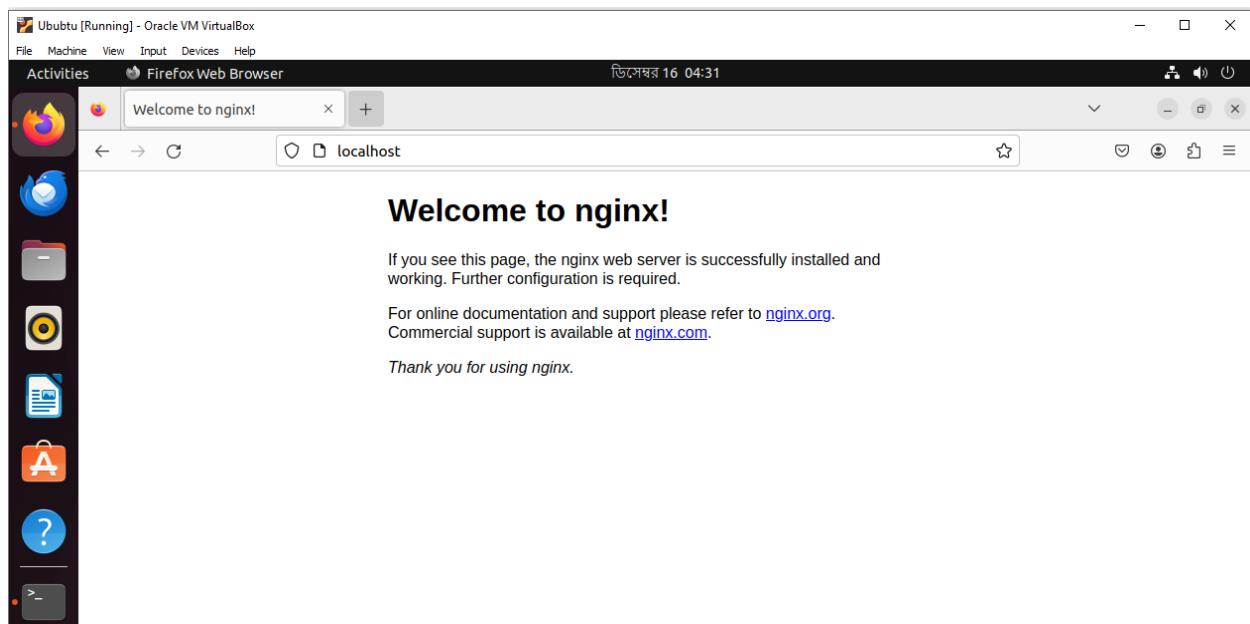
Install nginx-

Cmd: sudo apt install nginx

Start the nginx server-

```
raisavbox@Ubuntu:~$ sudo systemctl start nginx
raisavbox@Ubuntu:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset:
   Active: active (running) since Sat 2023-12-16 04:20:52 +06; 1min 53s ago
     Docs: man:nginx(8)
   Process: 3735 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_proce
   Process: 3736 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (c
 Main PID: 3826 (nginx)
    Tasks: 3 (limit: 1405)
   Memory: 5.5M
      CPU: 49ms
   CGroup: /system.slice/nginx.service
           └─3826 "nginx: master process /usr/sbin/nginx -g daemon on; master
             └─3829 "nginx: worker process" "" "" "" "" "" "" "" "" "" "" "" ""
             └─3830 "nginx: worker process" "" "" "" "" "" "" "" "" "" "" "" ""
ডিসেম্বর 16 04:20:52 Ubuntu systemd[1]: Starting A high performance web server a
ডিসেম্বর 16 04:20:52 Ubuntu systemd[1]: Started A high performance web server an
lines 1-17/17 (END)
```

Open a web browser in VM and in the address bar type: <http://localhost>



10. To create a mysql database server in vm and access it from host machine:

Install mysql package-

Cmd: sudo apt install mysql-server
sudo apt install mysql-client -y
sudo systemctl start mysql

To enable service in boot-up time:

Cmd: sudo systemctl enable mysql

```
raisavbox@Ubuntu:~$ sudo systemctl status mysql
● mysql.service - MySQL Community Server
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enable)
   Active: active (running) since Sun 2023-12-17 01:53:56 +06; 20min ago
     Main PID: 879 (mysqld)
    Status: "Server is operational"
      Tasks: 37 (limit: 1405)
     Memory: 87.8M
        CPU: 15.931s
    CGroup: /system.slice/mysql.service
           └─879 /usr/sbin/mysqld

ডিসেম্বর 17 01:53:50 Ubuntu systemd[1]: Starting MySQL Community Server...
ডিসেম্বর 17 01:53:56 Ubuntu systemd[1]: Started MySQL Community Server.
lines 1-13/13 (END)
```

Now, we have to perform the configurations:

```
raisavbox@Ubuntu:~$ sudo mysql_secure_installation

Securing the MySQL server deployment.

Connecting to MySQL using a blank password.
The 'validate_password' component is installed on the server.
The subsequent steps will run with the existing configuration
of the component.

Skipping password set for root as authentication with auth_socket is used by default.
If you would like to use password authentication instead, this can be done with the "ALTER_USER" command.
See https://dev.mysql.com/doc/refman/8.0/en/alter-user.html#alter-user-password-management for more information.

By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.

Remove anonymous users? (Press y|Y for Yes, any other key for No) : Y
Success.

Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : Y
```

To connect to database:

```

raisavbox@Ubuntu:~$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.35-0ubuntu0.22.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases
-> show databases;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version f
or the right syntax to use near 'show databases' at line 2
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.08 sec)

```

Open the mysql config file in VM and comment out the bind address. Restart the service.

We need to create a mysql user who can connect to the databases remotely. Connecting remotely as the root user is not allowed.

```

raisavbox@Ubuntu:~$ sudo nano /etc/mysql/mysql.conf.d/mysqld.cnf
[sudo] password for raisavbox:
raisavbox@Ubuntu:~$ sudo systemctl restart mysql
raisavbox@Ubuntu:~$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.35-0ubuntu0.22.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create user "raisasql"@"%" identified by "raisa123";
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
mysql> create user "raisasql"@"%" identified by "raisa@123";
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
mysql> create user "raisasql"@"%" identified by "MMraisa@123";
Query OK, 0 rows affected (0.06 sec)

```

On our host machine, we need to install mysql client. After that, connection can be made through:

```

C:\Users\ADMIN>mysql -h 192.168.56.101 -u raisasql -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.0.35-0ubuntu0.22.04.1 (Ubuntu)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+-----+
| Database                |
+-----+
| information_schema      |
| performance_schema      |
+-----+
2 rows in set (0.04 sec)

```

11. To replace default nginx page with an index.html page containing my name and to access it from web browser:

Start the nginx server:

Cmd: sudo systemctl start nginx

Sudo systemctl status nginx

Navigate to the html directory where web files for serving websites/web applications are placed and change the content of the html file. Display the changes on the web browser:

```

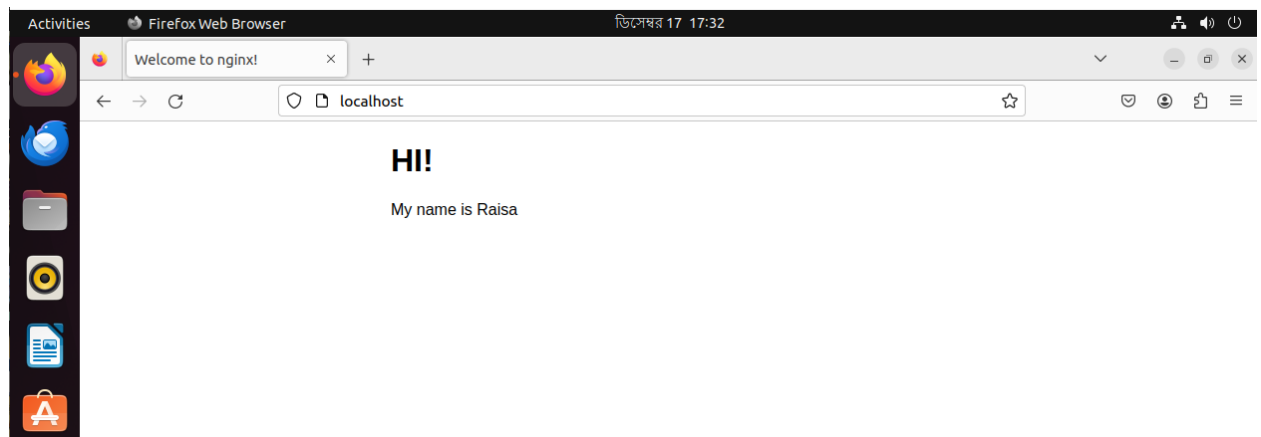
raisavbox@Ubuntu:~$ cd /var/www/html
raisavbox@Ubuntu:/var/www/html$ ls
index.nginx-debian.html
raisavbox@Ubuntu:/var/www/html$ sudo nano index.nginx-debian.html
[sudo] password for raisavbox:
raisavbox@Ubuntu:/var/www/html$ sudo systemctl restart nginx

```

```
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
  body {
    width: 35em;
    margin: 0 auto;
    font-family: Tahoma, Verdana, Arial, sans-serif;
  }
</style>
</head>
<body>
<h1>HI!</h1>
<p>My name is Raisa</p>

</body>
</html>
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^_ Go To Line



12. To display the same index.html file in "raisaa.com" by utilizing hostname of vm and host machine:
Open the "hosts" file in VM and configure it with the VM's ip and the domain name.

```

raisavbox@Ubuntu:~$ sudo nano /etc/hosts
[sudo] password for raisavbox:
raisavbox@Ubuntu:~$ sudo systemctl start nginx
raisavbox@Ubuntu:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: en>
   Active: active (running) since Tue 2023-12-19 19:05:18 +06; 5min ago
     Docs: man:nginx(8)
  Process: 695 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_proces>
  Process: 718 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (co>
 Main PID: 728 (nginx)
    Tasks: 3 (limit: 1405)
   Memory: 3.3M
      CPU: 88ms
   CGroup: /system.slice/nginx.service
           └─728 "nginx: master process /usr/sbin/nginx -g daemon on; master_>
             └─729 "nginx: worker process" "" "" "" "" "" "" "" "" "" "" "" "" >
               └─730 "nginx: worker process" "" "" "" "" "" "" "" "" "" "" "" "" >

ডিসেম্বর 19 19:05:18 Ubuntu systemd[1]: Starting A high performance web server a>
ডিসেম্বর 19 19:05:18 Ubuntu systemd[1]: Started A high performance web server an>
lines 1-17/17 (END)

```

Now, configure the “hosts” file within the host machine with the VM’s ip and domain name raisaa.com as well. “hosts” file can be found inside

C:\Windows\System32\drivers\etc.

We cannot configure the “hosts” file without admin privileges. We can then display the website using our host machine’s web browser.

