

## LAB 4

Network connections [ Help ]

Configure at least one interface this server can use to talk to other machines, and which preferably provides sufficient access for updates.

NAME	TYPE	NOTES
[ enp0s5	eth	- ▶ ]
DHCPv4	10.211.55.4/24	
00:1c:42:48:ed:f3 / Red Hat, Inc. / Virtio network device		

[ Create bond ▶ ]

### 1 Add User natthanan

```
devuser@backend012:~$ sudo -i
[sudo] password for devuser:
root@backend012:~# adduser natthanan
Adding user `natthanan' ...
Adding new group `natthanan' (1001) ...
Adding new user `natthanan' (1001) with group `natthanan' ...
Creating home directory `/home/natthanan' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for natthanan
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
```

### 2 usermod -aG sudo natthanan

```
root@backend012:~# usermod -aG sudo natthanan
```

### 3 Setting up a firewall

```
root@backend012:~# ufw app list
Available applications:
  OpenSSH
root@backend012:~# ufw allow OpenSSH
Rules updated
Rules updated (v6)
root@backend012:~# ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
root@backend012:~# ufw status
Status: active

To Action From
--
OpenSSH ALLOW Anywhere
OpenSSH (v6) ALLOW Anywhere (v6)
```

## 4 Install Nginx

### 4.1 Update your system

[sudo apt update && sudo apt upgrade](#)

### 4.2 Install Nginx, Certbot and Python3-Certbot-Nginx

[sudo apt install nginx certbot python3-certbot-nginx](#)

```
root@backend012:~# sudo apt install nginx certbot python3-certbot-nginx
```

### 4.3 UFW Firewall Configuration

```
root@backend012:~# sudo ufw allow 'Nginx Full'
Rule added
Rule added (v6)
root@backend012:~# sudo ufw status
Status: active
```

## 5 Download and import the Nodesource GPG key

```
natthanan@backend012:~$ sudo apt-get update
sudo apt-get install -y ca-certificates curl gnupg
[sudo] password for natthanan:
Hit:1 http://ports.ubuntu.com/ubuntu-ports jammy InRelease
Get:2 http://ports.ubuntu.com/ubuntu-ports jammy-updates InRelease [119 kB]
Hit:3 http://ports.ubuntu.com/ubuntu-ports jammy-backports InRelease
Get:4 http://ports.ubuntu.com/ubuntu-ports jammy-security InRelease [110 kB]
Fetched 229 kB in 2s (104 kB/s)
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20230311ubuntu0.22.04.1).
ca-certificates set to manually installed.
curl is already the newest version (7.81.0-1ubuntu1.15).
curl set to manually installed.
gnupg is already the newest version (2.2.27-3ubuntu2.1).
gnupg set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
```

```
natthanan@backend012:~$ sudo apt-get update
sudo apt-get install -y ca-certificates curl gnupg
[sudo] password for natthanan:
Hit:1 http://ports.ubuntu.com/ubuntu-ports jammy InRelease
Get:2 http://ports.ubuntu.com/ubuntu-ports jammy-updates InRelease [119 kB]
Hit:3 http://ports.ubuntu.com/ubuntu-ports jammy-backports InRelease
Get:4 http://ports.ubuntu.com/ubuntu-ports jammy-security InRelease [110 kB]
Fetched 229 kB in 2s (104 kB/s)
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20230311ubuntu0.22.04.1).
ca-certificates set to manually installed.
curl is already the newest version (7.81.0-1ubuntu1.15).
curl set to manually installed.
gnupg is already the newest version (2.2.27-3ubuntu2.1).
gnupg set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
natthanan@backend012:~$ sudo mkdir -p /etc/apt/keyrings
natthanan@backend012:~$ curl -fsSL https://deb.nodesource.com/gpgkey/nodesource-repo.gpg.key | sudo gpg --dearmor -o /etc/apt/keyrings/nodesource.gpg
natthanan@backend012:~$ NODE_MAJOR=20
natthanan@backend012:~$ echo "deb [signed-by=/etc/apt/keyrings/nodesource.gpg] https://deb.nodesource.com/node_$NODE_MAJOR.x nodistro main" | sudo tee /etc/apt/sources.list.d/nodesource.list
deb [signed-by=/etc/apt/keyrings/nodesource.gpg] https://deb.nodesource.com/node_20.x nodistro main
natthanan@backend012:~$ sudo apt-get update
Get:1 https://deb.nodesource.com/node_20.x nodistro InRelease [12.1 kB]
Get:2 https://deb.nodesource.com/node_20.x nodistro/main arm64 Packages [4,685 B]
Hit:3 http://ports.ubuntu.com/ubuntu-ports jammy InRelease
Hit:4 http://ports.ubuntu.com/ubuntu-ports jammy-updates InRelease
Hit:5 http://ports.ubuntu.com/ubuntu-ports jammy-backports InRelease
Hit:6 http://ports.ubuntu.com/ubuntu-ports jammy-security InRelease
Fetched 16.8 kB in 2s (10.6 kB/s)
Reading package lists... Done
```

```
natthanan@backend012:~$ sudo apt-get install nodejs -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  nodejs
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 30.4 MB of archives.
After this operation, 195 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_20.x nodistro/main arm64 nodejs arm64 20.10.0-1nodesource1 [30.4 MB]
Fetched 30.4 MB in 1s (27.5 MB/s)
Selecting previously unselected package nodejs.
(Reading database ... 77843 files and directories currently installed.)
Preparing to unpack .../nodejs_20.10.0-1nodesource1_arm64.deb ...
Unpacking nodejs (20.10.0-1nodesource1) ...
Setting up nodejs (20.10.0-1nodesource1) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

## Mysql

```
natthanan@server:~$ sudo mysql
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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owners.

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

mysql> CREATE DATABASE IF NOT EXISTS `nodelogin` DEFAULT CHARACTER SET utf8 COLLAT
E utf8_general_ci;
Query OK, 1 row affected, 2 warnings (0.00 sec)

mysql> GRANT ALL ON nodelogin.* TO 'example_user'@'%';
ERROR 1410 (42000): You are not allowed to create a user with GRANT
mysql> USE nodelogin;
Database changed
mysql> CREATE TABLE IF NOT EXISTS `accounts` (
  -> `id` int(11) NOT NULL AUTO_INCREMENT,
  -> `username` varchar(50) NOT NULL,
  -> `password` varchar(255) NOT NULL,
  -> `email` varchar(100) NOT NULL,
  -> PRIMARY KEY (`id`)
  -> ) ENGINE=InnoDB AUTO_INCREMENT=2 DEFAULT CHARSET=utf8;
Query OK, 0 rows affected, 2 warnings (0.01 sec)

mysql> INSERT INTO `accounts` (`id`, `username`, `password`, `email`) VALUES (1, '
test', 'test', 'test@test.com');
Query OK, 1 row affected (0.01 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

mysql> exit
```

```
natthanan@server:~$ mysql
ERROR 1045 (28000): Access denied for user 'natthanan'@'localhost' (using password
: NO)
natthanan@server:~$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
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> CREATE USER 'example_user'@'%' IDENTIFIED BY 'P@ssw0rd@2023';
Query OK, 0 rows affected (0.01 sec)

mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'P@ssw0rd@2023';
Query OK, 0 rows affected (0.00 sec)

mysql> show databaes
->
->
->
->
->
->
-> ^C
mysql> exit
Bye
```

```
mysql> ALTER USER 'example_user'@'%' IDENTIFIED WITH mysql_native_password BY 'P@ssw0rd@2023';
Query OK, 0 rows affected (0.01 sec)
```

```
mysql> USE `nodelogin`;
Database changed
mysql>
mysql> CREATE TABLE IF NOT EXISTS `accounts` (
  ->   `id` int(11) NOT NULL AUTO_INCREMENT,
  ->   `username` varchar(50) NOT NULL,
  ->   `password` varchar(255) NOT NULL,
  ->   `email` varchar(100) NOT NULL,
  ->   PRIMARY KEY (`id`)
  -> ) ENGINE=InnoDB AUTO_INCREMENT=2 DEFAULT CHARSET=utf8;
Query OK, 0 rows affected, 3 warnings (0.01 sec)

mysql> INSERT INTO `accounts` (`id`, `username`, `password`, `email`) VALUES (1, '
test', 'test', 'test@test.com');
ERROR 1062 (23000): Duplicate entry '1' for key 'accounts.PRIMARY'
mysql> INSERT INTO `accounts` (`id`, `username`, `password`, `email`) VALUES (1, '
test', 'test', 'test@test.com');
ERROR 1062 (23000): Duplicate entry '1' for key 'accounts.PRIMARY'
mysql> INSERT INTO `accounts` (`id`, `username`, `password`, `email`) VALUES (2, '
test2', 'test2', 'test2@test.com');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO `accounts` (`id`, `username`, `password`, `email`) VALUES (3, '
test3', 'test3', 'test3@test.com');
Query OK, 1 row affected (0.00 sec)
```

```
natthanan@backend1-66543210012:~$ sudo ufw allow 'Nginx Full'
Skipping adding existing rule
Skipping adding existing rule (v6)
natthanan@backend1-66543210012:~$ sudo ufw status
Status: active
```

To	Action	From
--	-----	----
OpenSSH	ALLOW	Anywhere
Apache	ALLOW	Anywhere
Nginx Full	ALLOW	Anywhere
3333	ALLOW	Anywhere
3000	ALLOW	Anywhere
3003	ALLOW	Anywhere
OpenSSH (v6)	ALLOW	Anywhere (v6)
Apache (v6)	ALLOW	Anywhere (v6)
Nginx Full (v6)	ALLOW	Anywhere (v6)
3333 (v6)	ALLOW	Anywhere (v6)
3000 (v6)	ALLOW	Anywhere (v6)
3003 (v6)	ALLOW	Anywhere (v6)

```
natthanan@backend1-66543210012:~$ node -v
v20.11.0
natthanan@backend1-66543210012:~$ npm -v
10.2.4
```

```
natthanan@backend1-66543210012:~$ cd /var/www/lab4/
natthanan@backend1-66543210012:/var/www/lab4$ sudo chown -R $USER:$USER /var/www/lab4
natthanan@backend1-66543210012:/var/www/lab4$ ls
nodeLogin
natthanan@backend1-66543210012:/var/www/lab4$ mkdir serve
```

```
natthanan@backend1-66543210012:/var/www/lab4$ mkdir server
natthanan@backend1-66543210012:/var/www/lab4$ cd server
natthanan@backend1-66543210012:/var/www/lab4/server$ npm init
```

```
natthanan@backend1-66543210012:/var/www/lab4/server$ npm install express --save
```

```
added 62 packages, and audited 63 packages in 3s
```

```
11 packages are looking for funding
  run `npm fund` for details
```

```
found 0 vulnerabilities
```

```
natthanan@backend1-66543210012:/var/www/lab4/server$
```

```
natthanan@backend1-66543210012:/var/www/lab4/server$ npm install --save mysql2
```

```
added 11 packages, and audited 74 packages in 807ms
```

```
11 packages are looking for funding
  run `npm fund` for details
```

```
found 0 vulnerabilities
```

```
natthanan@backend1-66543210012:/var/www/lab4/server$ npm i --save cors
```

```
added 2 packages, and audited 76 packages in 2s
```

```
11 packages are looking for funding
  run `npm fund` for details
```

```
found 0 vulnerabilities
```



```

natthanan@backend1-66543210012:/var/www/lab4/server$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 19
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> CREATE DATABASE IF NOT EXISTS `loginsystem` DEFAULT CHARACTER SET utf8 COLLATE utf8_general_ci;
Query OK, 1 row affected, 3 warnings (0.00 sec)

mysql> USE loginsystem;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> CREATE TABLE IF NOT EXISTS `users` (
  ->   `username` varchar(50) NOT NULL,
  ->   `password` varchar(500) NOT NULL,
  ->   PRIMARY KEY (`username`)
  -> ) ENGINE=InnoDB DEFAULT CHARSET=utf8;
Query OK, 0 rows affected, 2 warnings (0.00 sec)

mysql> 

```

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## Registration

Username

password

Register

## Login

Login

'test' was logged in.

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## Registration

Username

password

Register

## Login

Username...

Password...

Login

### Backend

```
natthanan@backend2-66543210012:~$ cd /var/www/
natthanan@backend2-66543210012:/var/www$ ls
html
natthanan@backend2-66543210012:/var/www$ sudo chown -R $USER:$USER /var/www
natthanan@backend2-66543210012:/var/www$ mkdir lab4
natthanan@backend2-66543210012:/var/www$ ls
html  lab4
natthanan@backend2-66543210012:/var/www$ cd lab4
natthanan@backend2-66543210012:/var/www/lab4$ mkdir server
natthanan@backend2-66543210012:/var/www/lab4$ cd server
natthanan@backend2-66543210012:/var/www/lab4/server$ npm init
```

```
natthanan@backend2-66543210012:/var/www/lab4/server$ npm install express --save
added 62 packages, and audited 63 packages in 2s

11 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
natthanan@backend2-66543210012:/var/www/lab4/server$ npm install --save mysql2
added 11 packages, and audited 74 packages in 7s

11 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
natthanan@backend2-66543210012:/var/www/lab4/server$ npm i --save cors
added 2 packages, and audited 76 packages in 668ms

11 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
natthanan@backend2-66543210012:/var/www/lab4/server$
```

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## Registration

Username

password

Register

## Login

Username...

Password...

Login