

Lab 4

รวมคำสั่งlab4

step1 install ubuntu sever

B. server เดิม

```
Last login: Wed Jan  3 05:13:42 UTC 2024 on tty1
devuser@webserver008:~$ hostname
webserver008
devuser@webserver008:~$
```

A. server ใหม่

```
devuser@backend008:~$ hostname
backend008
devuser@backend008:~$
```

Setting Up a Firewall

```
devuser@backend008:~$ sudo ufw app list
[sudo] password for devuser:
Available applications:
  OpenSSH
```

```
devuser@backend008:~$ sudo ufw allow OpenSSH
Rules updated
Rules updated (v6)
devuser@backend008:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
devuser@backend008:~$ sudo ufw status
Status: active

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

Step 2 — MySQL Server

update ubuntu

```
devuser@backend008:~$ sudo apt update
[sudo] password for devuser:
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 (111 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
47 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

```
devuser@backend008:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  ubuntu-pro-client-l10n
The following packages have been kept back:
  distro-info distro-info-data python3-distro-info python3-software-properties
    python3-update-manager software-properties-common update-manager-core
The following packages will be upgraded:
  apparmor apt apt-utils bind9-dnsutils bind9-host bind9-libs cloud-init cryptsetup
  cryptsetup-bin cryptsetup-initramfs git git-man initramfs-tools initramfs-tools-bin
  initramfs-tools-core irqbalance kpartx libapparmor1 libapt-pkg6.0 libcryptsetup12
  libldap-2.5-0 libldap-common libnetplan0 libnss-systemd libpam-systemd libsgutils2-2
  libsystemd0 libudev1 multipath-tools netplan.io sg3-utils sg3-utils-udev sosreport systemd
  systemd-hwe-hwdb systemd-sysv systemd-timesyncd ubuntu-advantage-tools
  ubuntu-drivers-common udev
40 upgraded, 1 newly installed, 0 to remove and 7 not upgraded.
Need to get 18.8 MB of archives.
After this operation, 5,591 kB disk space will be freed.
Do you want to continue? [Y/n] y
Get:1 http://ports.ubuntu.com/ubuntu-ports jammy-updates/main arm64 libnss-systemd arm64 249.11-0ubuntu3.11 [133 kB]
Get:2 http://ports.ubuntu.com/ubuntu-ports jammy-updates/main arm64 libsystemd0 arm64 249.11-0ubuntu3.11 [315 kB]
Get:3 http://ports.ubuntu.com/ubuntu-ports jammy-updates/main arm64 systemd-timesyncd arm64 249.11-0ubuntu3.11 [29.9 kB]
Get:4 http://ports.ubuntu.com/ubuntu-ports jammy-updates/main arm64 systemd-sysv arm64 249.11-0ubuntu3.11 [10.5 kB]
Get:5 http://ports.ubuntu.com/ubuntu-ports jammy-updates/main arm64 libpam-systemd arm64 249.11-0ubuntu3.11 [205 kB]
Get:6 http://ports.ubuntu.com/ubuntu-ports jammy-updates/main arm64 systemd arm64 249.11-0ubuntu3.11 [4,423 kB]
Get:7 http://ports.ubuntu.com/ubuntu-ports jammy-updates/main arm64 udev arm64 249.11-0ubuntu3.
```

install MySQL server

```
devuser@backend008:~$ sudo apt-cache search mysql-server
mysql-server - MySQL database server (metapackage depending on the latest version)
mysql-server-8.0 - MySQL database server binaries and system database setup
mysql-server-core-8.0 - MySQL database server binaries
default-mysql-server - MySQL database server binaries and system database setup (metapackage)
default-mysql-server-core - MySQL database server binaries (metapackage)
mariadb-server-10.6 - MariaDB database server binaries
mariadb-server-core-10.6 - MariaDB database core server files
```

```
devuser@backend008:~$ sudo apt info -a mysql-server-8.0
Package: mysql-server-8.0
Version: 8.0.35-0ubuntu0.22.04.1
Priority: optional
Section: database
Source: mysql-8.0
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Original-Maintainer: Debian MySQL Maintainers <pkg-mysql-maint@lists.alioth.debian.org>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Installed-Size: 1,402 kB
Provides: virtual-mysql-server
Pre-Depends: adduser (>= 3.40), debconf, mysql-common (>= 5.5)
Depends: lsb-base (>= 3.0-10), mysql-client-8.0 (>= 8.0.35-0ubuntu0.22.04.1), mysql-common (>= 5.8+1.0.4~), mysql-server-core-8.0 (= 8.0.35-0ubuntu0.22.04.1), passwd, perl:any (>= 5.6), psmisc, debconf (>= 0.5) | debconf-2.0
Recommends: libhtml-template-perl, mecab-ipadic-utf8
Suggests: mailx, tinyca
Conflicts: mariadb-server-10.1, mariadb-server-10.3, mysql-server-5.7, virtual-mysql-server
Homepage: http://dev.mysql.com/
Task: lamp-server
Download-Size: 1,238 kB
APT-Sources: http://ports.ubuntu.com/ubuntu-ports jammy-updates/main arm64 Packages
Description: MySQL database server binaries and system database setup
MySQL is a fast, stable and true multi-user, multi-threaded SQL database
server. SQL (Structured Query Language) is the most popular database query
language in the world. The main goals of MySQL are speed, robustness and
ease of use.

.
This package contains all the infrastructure needed to setup system
databases.

Package: mysql-server-8.0
Version: 8.0.28-0ubuntu4
Priority: optional
Section: database
Source: mysql-8.0
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Original-Maintainer: Debian MySQL Maintainers <pkg-mysql-maint@lists.alioth.debian.org>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Installed-Size: 1,430 kB
Provides: virtual-mysql-server
Pre-Depends: adduser (>= 3.40), debconf, mysql-common (>= 5.5)
Depends: lsb-base (>= 3.0-10), mysql-client-8.0 (>= 8.0.28-0ubuntu4), mysql-common (>= 5.8+1.0.4~), mysql-server-core-8.0 (= 8.0.28-0ubuntu4), passwd, perl:any (>= 5.6), psmisc, debconf (>= 0.5) | debconf-2.0
Recommends: libhtml-template-perl, mecab-ipadic-utf8
Suggests: mailx, tinyca
Conflicts: mariadb-server-10.1, mariadb-server-10.3, mysql-server-5.7, virtual-mysql-server
Homepage: http://dev.mysql.com/
Task: lamp-server
```

เข้าไปสร้างรหัสผ่านของrootใน mysql

```
root@backend008:~# sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 13
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> ALTER USER 'root'@'localhost' IDENTIFIED
      -> BY 'P@ssw0rd@2023';
Query OK, 0 rows affected (0.00 sec)

mysql> flush privileges;
Query OK, 0 rows affected (0.01 sec)

mysql> exit
Bye
root@backend008:~# sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 14
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> exit
Bye
```

install MySQL secure

```
root@backend008:~# sudo mysql_secure_installation

Securing the MySQL server deployment.

Connecting to MySQL using a blank password.

VALIDATE PASSWORD COMPONENT can be used to test passwords
and improve security. It checks the strength of password
and allows the users to set only those passwords which are
secure enough. Would you like to setup VALIDATE PASSWORD component?

Press y|Y for Yes, any other key for No: y

There are three levels of password validation policy:

LOW      Length >= 8
MEDIUM   Length >= 8, numeric, mixed case, and special characters
STRONG   Length >= 8, numeric, mixed case, special characters and dictionary
          file

Please enter 0 = LOW, 1 = MEDIUM and 2 = STRONG: 1

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
```

```
root@backend008:~# sudo systemctl is-enabled mysql.service
enabled
root@backend008:~# sudo systemctl enable mysql.service
Synchronizing state of mysql.service with SysV service script with /lib/systemd/systemd-sysv-in-
stall.
Executing: /lib/systemd/systemd-sysv-install enable mysql
root@backend008:~# sudo systemctl status mysql.service
● mysql.service - MySQL Community Server
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)
     Active: active (running) since Wed 2024-01-03 05:34:14 UTC; 52min ago
       Main PID: 17600 (mysqld)
          Status: "Server is operational"
             Tasks: 39 (limit: 4524)
            Memory: 365.4M
              CPU: 12.026s
             CGroup: /system.slice/mysql.service
                       └─17600 /usr/sbin/mysqld

Jan 03 05:34:14 backend008 systemd[1]: Starting MySQL Community Server...
Jan 03 05:34:14 backend008 systemd[1]: Started MySQL Community Server.
root@backend008:~# sudo systemctl start mysql.service
```

Step 3 — Install Nginx

```
devuser@backend008:~$ sudo apt update && sudo apt upgrade
Hit:1 http://ports.ubuntu.com/ubuntu-ports jammy InRelease
Hit:2 http://ports.ubuntu.com/ubuntu-ports jammy-updates InRelease
Hit:3 http://ports.ubuntu.com/ubuntu-ports jammy-backports InRelease
Hit:4 http://ports.ubuntu.com/ubuntu-ports jammy-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
7 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages have been kept back:
  distro-info distro-info-data python3-distro-info python3-software-properties
    python3-update-manager software-properties-common update-manager-core
0 upgraded, 0 newly installed, 0 to remove and 7 not upgraded.
devuser@backend008:~$ sudo apt install nginx certbot python3-certbot-nginx
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  fontconfig-config fonts-dejavu-core libdeflate0 libfontconfig1 libgd3 libjbig0
    libjpeg-turbo8 libjpeg8 libnginx-mod-http-geoip2 libnginx-mod-http-image-filter
    libnginx-mod-http-xslt-filter libnginx-mod-mail libnginx-mod-stream
    libnginx-mod-stream-geoip2 libtiff5 libwebp7 libxpm4 nginx-common nginx-core python3-acme
    python3-certbot python3-configargparse python3-icu python3-josepy python3-parsedatetime
    python3-requests-toolbelt python3-rfc3339 python3-zope.component python3-zope.event
    python3-zope.hookable
Suggested packages:
```

```
devuser@backend008:~$ sudo ufw allow 'Nginx Full'
Rule added
Rule added (v6)
```

Step 4 — Nodejs Installation

```
devuser@backend008:~$ sudo apt-get update
Hit:1 http://ports.ubuntu.com/ubuntu-ports jammy InRelease
Hit:2 http://ports.ubuntu.com/ubuntu-ports jammy-updates InRelease
Hit:3 http://ports.ubuntu.com/ubuntu-ports jammy-backports InRelease
Hit:4 http://ports.ubuntu.com/ubuntu-ports jammy-security InRelease
Reading package lists... Done
devuser@backend008:~$ sudo apt-get install -y ca-certificates curl gnupg
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 7 not upgraded.
devuser@backend008:~$ sudo mkdir -p /etc/apt/keyrings
devuser@backend008:~$ curl -fsSL https://deb.nodesource.com/gpgkey/nodesource-repo.gpg.key | sudo gpg --dearmor -o /etc/apt/keyrings/nodesource.gpg
devuser@backend008:~$
```

```
gpg: keyring '/etc/apt/keyrings/nodesource.gpg' created
devuser@backend008:~$ NODE_MAJOR=20
devuser@backend008:~$ 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
```

```
devuser@backend008:~$ 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 1s (12.2 kB/s)
Reading package lists... Done
devuser@backend008:~$ 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 0 not upgraded.
```

```
devuser@backend008:~$ node -v
v20.10.0
devuser@backend008:~$ npm -v
10.2.3
devuser@backend008:~$
```

Step 5 — Create Login System with Node.js App

```
devuser@webserver008:~$ sudo mkdir -p /var/www/lab4
[sudo] password for devuser:
devuser@webserver008:~$ cd /var/www/lab4
devuser@webserver008:/var/www/lab4$ sudo mkdir -p nodelogin
devuser@webserver008:/var/www/lab4$ sudo chown -R $USER:$USER
chown: missing operand after 'devuser:devuser'
Try 'chown --help' for more information.
devuser@webserver008:/var/www/lab4$ sudo chown -R $USER:$USER /var/www/lab4
```

install app.js

```
devuser@webserver008:/var/www/lab4/nodelogin$ npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.
```

```
See `npm help init` for definitive documentation on these fields
and exactly what they do.
```

```
Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.
```

```
Press ^C at any time to quit.
```

```
package name: (nodelogin)
```

```
version: (1.0.0)
```

```
description:
```

```
entry point: (index.js)
```

```
test command:
```

```
git repository:
```

```
keywords:
```

```
author:
```

```
license: (ISC)
```

```
About to write to /var/www/lab4/nodelogin/package.json:
```

```
devuser@webserver008:/var/www/lab4/nodelogin$ npm install express-session --save
```

```
added 5 packages, and audited 68 packages in 6s
```

```
11 packages are looking for funding
```

```
  run `npm fund` for details
```

```
found 0 vulnerabilities
```

```
devuser@webserver008:/var/www/lab4/nodelogin$ ls
```

```
node_modules package.json package-lock.json
```

```
devuser@webserver008:/var/www/lab4/nodelogin$ npm install mysql --save
```

```
added 12 packages, and audited 80 packages in 1s
```

```
11 packages are looking for funding
```

```
  run `npm fund` for details
```

```
found 0 vulnerabilities
```

เข้าไปสร้าง user example_user และรหัสผ่านใน mysql

```
devuser@webserver008:/var/www/lab4/nodelogin$ sudo mysql -u root -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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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE USER 'example_user'@'%' IDENTIFIED BY 'P@ssw0rd@2023';
ERROR 1396 (HY000): Operation CREATE USER failed for 'example_user'@'%'
mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'P@ssw0rd@2023';
Query OK, 0 rows affected (0.01 sec)
```

สร้าง database nodelogin

```
mysql> CREATE DATABASE IF NOT EXISTS `nodelogin` DEFAULT CHARACTER SET utf8 COLLATE utf8_general_ci;
Query OK, 1 row affected, 3 warnings (0.01 sec)

mysql> GRANT ALL ON nodelogin.* TO 'example_user'@'%';
Query OK, 0 rows affected (0.00 sec)
```

ใส่ข้อมูลลงใน nodelogin

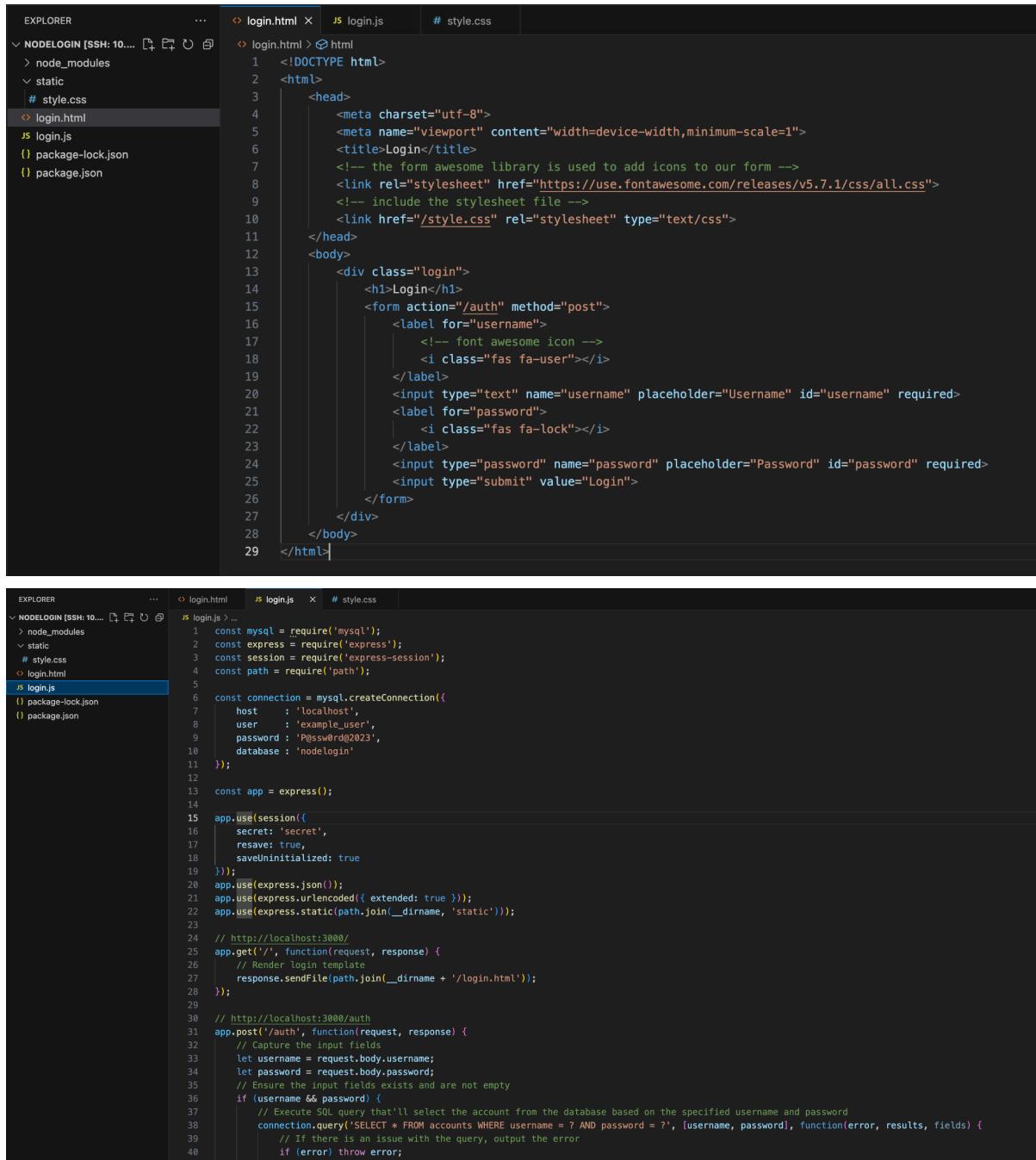
```
mysql> USE nodelogin;
Database changed
mysql>
mysql> CREATE TABLE IF NOT EXISTS `accounts` (
    ->   `id` int(11) NOT NULL AUTO_INCREMENT,
    ->   `username` varchar(50) NOT NULL,
    ->   `password` varchar(255) NOT NULL,
    ->   `email` varchar(100) NOT NULL,
    ->   PRIMARY KEY (`id`)
   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

mysql>
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 (0.01 sec)

mysql> EXIT
```

เข้าไปสร้างไฟล์ใน /var/www/lab4/nodelogin โดยใช้ remote ssh vscode



The screenshot shows the VS Code interface with two tabs open:

- login.html**: Displays the HTML code for a login form. It includes meta tags, a title, and a form action="/auth" method="post". The form contains fields for username and password, both with required attributes.
- login.js**: Displays the JavaScript code for the application. It uses Express.js to handle requests. It connects to a MySQL database using the mysql module, sets up session management with express-session, and defines routes for the login page and the authentication endpoint '/auth'. The MySQL connection configuration includes host ('localhost'), user ('example_user'), password ('P@sswrd2023'), and database ('nodelogin'). The Express app uses session middleware with a secret ('secret') and saves sessions to disk. It also uses static file serving for the 'static' directory. The '/auth' route handles POST requests by capturing input fields, checking if they exist and are not empty, executing a SQL query to select accounts from the 'accounts' table where username matches the input and password is correct, and returning results. If there's an error, it is thrown.



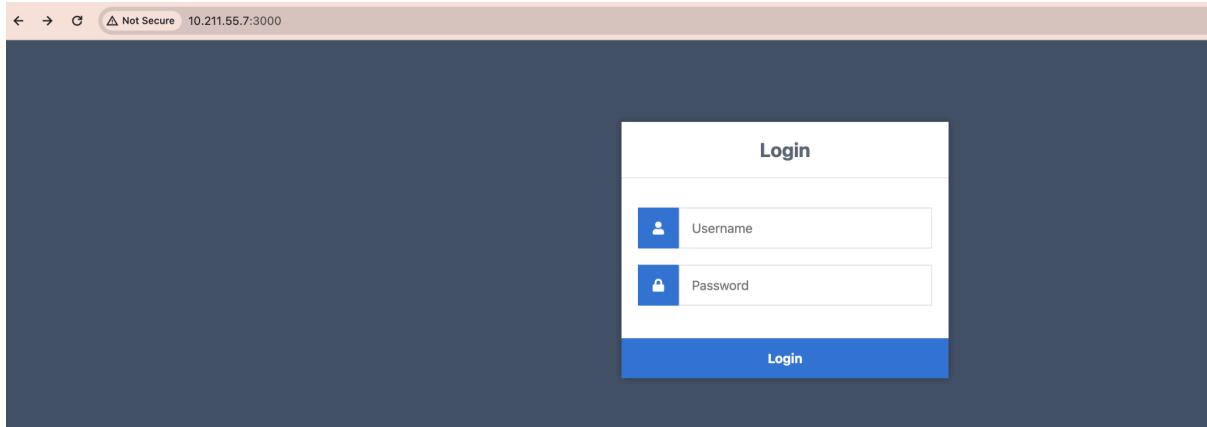
```
EXPLORER ... login.html login.js style.css
NODELOGIN [SSH: 10...]
> node_modules
  > static
    # style.css
      < login.html
      < login.js
    () package-lock.json
    () package.json
```

```
static > # style.css > .login form input[type="submit"]:hover
1  * {
2    box-sizing: border-box;
3    font-family: -apple-system, BlinkMacSystemFont, "segoe ui", roboto, oxygen, ubuntu, cantarell, "fira sans", "droid sans", "helvetica neue", Arial, sans-serif;
4    font-size: 16px;
5  }
6  body {
7    background-color: #435165;
8  }
9  .login {
10   width: 400px;
11   background-color: #ffffff;
12   box-shadow: 0 0 9px 0 rgba(0, 0, 0, 0.3);
13   margin: 100px auto;
14 }
15 .login h1 {
16   text-align: center;
17   color: #5b6574;
18   font-size: 24px;
19   padding: 20px 0 20px 0;
20   border-bottom: 1px solid #dee0e4;
21 }
22 .login form {
23   display: flex;
24   flex-wrap: wrap;
25   justify-content: center;
26   padding-top: 20px;
27 }
28 .login form label {
29   display: flex;
30   justify-content: center;
31   align-items: center;
32   width: 50px;
33   height: 50px;
34   background-color: #3274d6;
35   color: #ffffff;
36 }
37 .login form input[type="password"], .login form input[type="text"] {
38   width: 310px;
39   height: 50px;
40   border: 1px solid #dee0e4;
```

devuser@webserver008:/var/www/lab4/nodelogin\$ node login.js



ทดสอบ prot:3000



ป้อนข้อมูล user



Welcome back, test!

เปลี่ยน prot:3003

```
login.html login.js package.json package-lock.json style.css

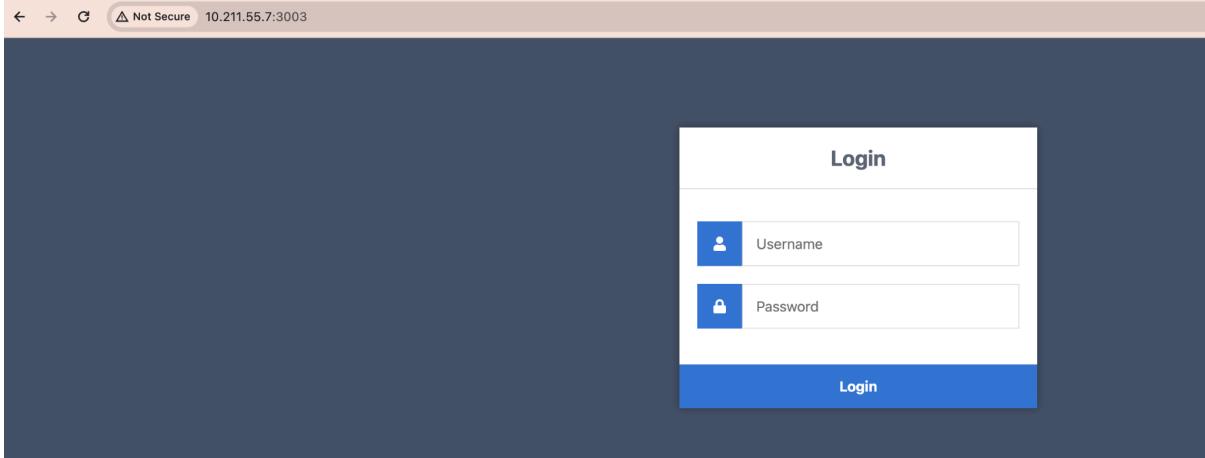
JS login.js > ...
54     response.send('Please enter Username and Password!');
55     response.end();
56   }
57 });
58
59 // http://localhost:3000/home
60 app.get('/home', function(request, response) {
61   // If the user isloggedin
62   if (request.session.loggedin) {
63     // Output username
64     response.send('Welcome back, ' + request.session.username + '!');
65   } else {
66     // Not logged in
67     response.send('Please login to view this page!');
68   }
69   response.end();
70 });
71
72 app.listen(3003);
```

```
login.html login.js package.json package-lock.json style.css

{} package.json > abc main
1 {
2   "name": "nodelogin",
3   "version": "1.0.0",
4   "description": "",
5   "main": "login.js",
6   ▷ Debug
7   "scripts": {
8     "test": "echo \"Error: no test specified\" && exit 1"
9   },
10  "author": "",
11  "license": "ISC",
12  "dependencies": {
13    "express": "^4.18.2",
14    "express-session": "^1.17.3",
15    "mysql": "^2.18.1"
16  }
17 }
18
```

```
devuser@webserver008:/var/www/lab4/nodelogin$ sudo ufw allow 3003
Rule added
Rule added (v6)
devuser@webserver008:/var/www/lab4/nodelogin$ node login.js
```

ทดลอง



เปลี่ยน ip

```
devuser@webserver008:/etc/nginx/sites-available$ sudo -i
root@webserver008:~# cd /etc/nginx/sites-available/
root@webserver008:/etc/nginx/sites-available# ls
default expressjs-example myapp next react
root@webserver008:/etc/nginx/sites-available# cp myapp api
root@webserver008:/etc/nginx/sites-available# sudo nano api
```

```
root@webserver008:/etc/nginx/sites-available# sudo nano /etc/hosts
root@webserver008:/etc/nginx/sites-available#
```

```
GNU nano 6.2                                         /etc/hosts
127.0.0.1 localhost
127.0.1.1 webserver008

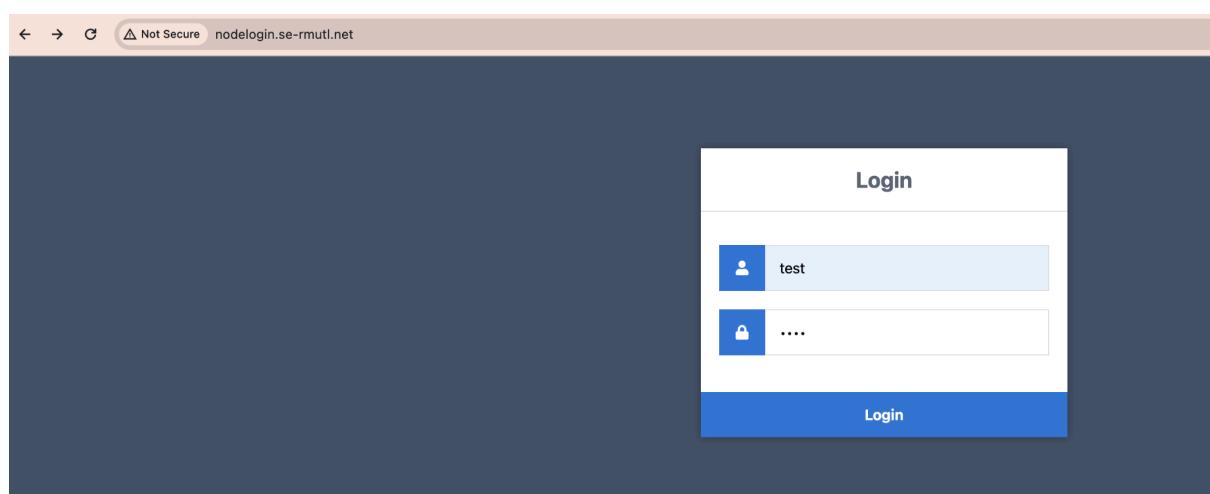
# The following lines are desirable for IPv6 capable hosts
::1      ip6-localhost ip6-loopback
fe00::0  ip6-localnet
ff00::0  ip6-mcastprefix
ff02::1  ip6-allnodes
ff02::2  ip6-allrouters
10.211.55.7 my-react-app.se-rmutil.net
10.211.55.7 ubuntu-next-app.se-rmutil.net
10.211.55.7 nodelogin.se-rmutil.net
```

```
admin — pico - sudo — 80x24
File: /etc/hosts Modified

##  
# Host Database  
#  
# localhost is used to configure the loopback interface  
# when the system is booting. Do not change this entry.  
##  
127.0.0.1      localhost engse203.lab1  
255.255.255.255 broadcasthost  
::1            localhost  
10.211.55.7    myapp.se-rmutil.net  
10.211.55.7    expressjs-example.se-rmutil.net  
10.211.55.7    my-react-app.se-rmutil.net  
10.211.55.7    ubuntu-next-app.se-rmutil.net  
10.211.55.7    nodelogin.se-rmutil.net
```

**^G Get Help ^O WriteOut ^R Read File ^Y Prev Pg ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where is ^V Next Pg ^U UnCut Text ^T To Spell**

```
devuser@webserver008:/var/www/lab4/nodelogin$ sudo service nginx restart  
devuser@webserver008:/var/www/lab4/nodelogin$ node login.js
```



step 6.1

สร้างไฟล์ react และติดตั้ง react

```
devuser@webserver008: ~ cd /var/www/lab4/client/  
devuser@webserver008:/var/www/lab4/client$ ls  
node_modules  package.json  package-lock.json  public  README.md  src  
devuser@webserver008:/var/www/lab4/client$
```

เข้าสู่ vscode และ เข้าไปแก้ไขไฟล์ app.css , app.js , index.js

The screenshot shows the VS Code interface with two tabs open. The left sidebar shows the project structure under 'OPEN EDITORS' and 'CLIENT [SSH: 192.168.56.104]'. The right pane shows the content of 'App.css' and 'index.js'.

App.css Content:

```
# App.css
src > # App.css > input
1  <div> .App {
2    text-align: center;
3  }
4
5  <div> .registration {
6    display: flex;
7    flex-direction: column;
8    justify-content: center;
9    align-items: center;
10 }
11
12 <div> .login {
13   display: flex;
14   flex-direction: column;
15   justify-content: center;
16   align-items: center;
17 }
18 <div> input {
19   width: 250px;
20   height: 40px;
21 }
```

index.js Content:

```
src > index.js
1 import React from 'react';
2 import ReactDOM from 'react-dom';
3 import './App.css';
4 import App from './App';
5
6 ReactDOM.render(
7   <React.StrictMode>
8     <App />
9   </React.StrictMode>,
10  document.getElementById('root')
11 );
12
```

This screenshot shows a single tab of code in VS Code, which is the content of the 'index.js' file.

```
src > index.js
1 import React from 'react';
2 import ReactDOM from 'react-dom';
3 import './App.css';
4 import App from './App';
5
6 ReactDOM.render(
7   <React.StrictMode>
8     <App />
9   </React.StrictMode>,
10  document.getElementById('root')
11 );
12
```

```
src > js App.js > App > register > then() callback
1  import React, { useEffect, useState } from "react";
2  import Axios from 'axios';
3  import './App.css';
4  function App() {
5      const [usernameReg, setUsernameReg] = useState("");
6      const [passwordReg, setPasswordReg] = useState("");
7      const [username, setUsername] = useState("");
8      const [password, setPassword] = useState("");
9      const [loginStatus, setLoginStatus] = useState("");
10     const register = () => {
11         Axios.post("http://192.168.56.104:4000/register", {
12             username: usernameReg,
13             password: passwordReg,
14         }).then((response) => [
15             console.log(response);
16
17             if (!response.data.err) {
18                 setLoginStatus("'" + usernameReg + "' was inserted.");
19             } else {
20                 setLoginStatus(response.data.err.sqlMessage);
21             }
22         ]);
23     };
24 };
25
26     const login = () => {
27         Axios.post("http://192.168.56.104:4000/login", {
28             username: username,
29             password: password,
30         }).then((response) => {
31             console.log(response);
32             //console.log("response.data.message: "+response.data[0].message);
33
34             if (!response.data.message) {
35                 setLoginStatus("'" + response.data[0].username + "' was logged in.");
36             } else {
37                 setLoginStatus(response.data.message);
38             }
39         });
40     };
41 }
```

```
src > JS App.js > App > [register] then() callback
      | setLoggingStatus(response.userData.message),
      |
      |     }
      |
      | );
      |
      |;
      |
      | return (
      |     <div className="App">
      |         <div className="registration">
      |             <h1>Registration</h1>
      |             <label>Username</label>
      |             <input
      |                 type="text"
      |                 onChange={(e) => {
      |                     setUsernameReg(e.target.value);
      |                 }}
      |             /><br />
      |             <label>password</label>
      |             <input
      |                 type="text"
      |                 onChange={(e) => {
      |                     setPasswordReg(e.target.value);
      |                 }}
      |             /> <br />
      |             <button onClick={register} > Register</button>
      |         </div>
      |
      |         <div className="login">
      |             <h1>Login</h1>
      |             <input
      |                 type="text"
      |                 placeholder="Username..."
      |                 onChange={(e) => {
      |                     setUsername(e.target.value);
      |                 }}
      |             /> <br />
      |             <input
      |                 type="password"
      |             />
      |         </div>
      |     </div>
      | 
```

JS App.js X

```
src > JS App.js > ⚡ App > [⌚] register > ⚡ then() callback
  6/   type="text"
  68   placeholder="Username..."
  69   onChange={(e) => {
  70     setUsername(e.target.value);
  71   }}
  72   /> <br />
  73   <input
  74   type="password"
  75   placeholder="Password..."
  76   onChange={(e) => {
  77     setPassword(e.target.value);
  78   }}
  79   />
  80   <button onClick={login}>Login</button>
  81   </div>
  82   <h1> {loginStatus}</h1>
  83   </div>
  84 );
  85 }
  86
  87 export default App;
```

เปลี่ยน port 3004

The screenshot shows a code editor interface with two tabs: "App.js" and "package.json". The "package.json" tab is active, displaying the following JSON configuration:

```
1  {
2    "name": "client",
3    "version": "0.1.0",
4    "private": true,
5    "dependencies": {
6      "@testing-library/jest-dom": "^5.17.0",
7      "@testing-library/react": "^13.4.0",
8      "@testing-library/user-event": "^13.5.0",
9      "axios": "^1.6.4",
10     "react": "^18.2.0",
11     "react-dom": "^18.2.0",
12     "react-scripts": "5.0.1",
13     "web-vitals": "^2.1.4"
14   },
15   ▶ Debug
16   "scripts": {
17     "start": "PORT=3004 react-scripts start",
18     "build": "react-scripts build",
19     "test": "react-scripts test",
20     "eject": "react-scripts eject"
21   },
22   "eslintConfig": {
23     "extends": [
24       "react-app",
25       "react-app/jest"
26     ],
27     "browserslist": {
28       "production": [
29         ">0.2%",
30         "not dead",
31         "not op_mini all"
32       ],
33       "development": [
34         "last 1 chrome version",
35         "last 1 firefox version",
36         "last 1 safari version"
37     }
38   }
39 }
```

```
GNU nano 6.2                               weblogin
server {
    listen 80;
    listen [::]:80;
    server_name weblogin.se-rmutil.net;

    location / {
        proxy_pass http://127.0.0.1:3004; # !!! - change to your app
        proxy_http_version 1.1;
        proxy_set_header Upgrade $http_upgrade;
        proxy_set_header Connection 'upgrade';
        proxy_set_header Host $host;
        proxy_cache_bypass $http_upgrade;
    }

}
```

```
C:\Windows\System32\drivers\etc\hosts - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
hosts x
4 #
5 # This file contains the mappings of IP addresses to host names. Each
6 # entry should be kept on an individual line. The IP address should
7 # be placed in the first column followed by the corresponding host name.
8 # The IP address and the host name should be separated by at least one
9 # space.
10 #
11 # Additionally, comments (such as these) may be inserted on individual
12 # lines or following the machine name denoted by a '#' symbol.
13 #
14 # For example:
15 #
16 #      102.54.94.97      rhino.acme.com      # source server
17 #      38.25.63.10      x.acme.com          # x client host
18 #
19 # localhost name resolution is handled within DNS itself.
20 #      127.0.0.1      localhost
21 #      ::1            localhost
22      192.168.56.102  lab2-1_008 lab2-2_008
23      192.168.56.104  my-react-app.se-rmutil.net
24      192.168.56.104  ubuntu-next-app.se-rmutil.net
25      192.166.56.104  weblogin.se-rmutil.net nodelogin.se-rmutil.net

Normal | length : 1,012  lines : 25           Ln : 10  Col : 2  Pos : 416           Windows (CR LF)
```

The screenshot shows a web page titled "Registration" with two sections: "Registration" and "Login".

- Registration:** Contains input fields for "Username" and "password", and a "Register" button.
- Login:** Contains input fields for "Username..." and "Password...", and a "Login" button.

6.2 Server

ทำการสร้างไดเรกทอรี server ใน lab 4

เข้าไปใน server สร้างไฟล์ package.json ด้วย npm init

```
devuser@webserver008:/var/www/lab4/client$ cd /var/www/lab4/server/
devuser@webserver008:/var/www/lab4/server$ ls
index.js  node_modules  package.json  package-lock.json
devuser@webserver008:/var/www/lab4/server$ █
```

ทำการสร้าง index.js

```
JS index.js  X  package.json  package-lock.json
JS index.js > ...
1 const express = require("express");
2 const mysql = require("mysql2");
3 const cors = require("cors");
4
5 const app = express();
6
7 const db = mysql.createConnection({
8   host: 'localhost',
9   user: 'example_user',
10  password: 'P@ssw0rd@2023',
11  database: 'loginsystem',
12 });
13
14 app.use(express.json());
15 app.use(
16   cors({
17     origin: ["http://192.168.56.104:3004"],
18     methods: ["GET", "POST"],
19     credentials: true,
20   })
21 );
22
23 app.get('/', (req, res) => {
24   console.log("Hello from API");
25 });
26
27 app.post('/login', (req, res) => {
28   let username = req.body.username;
```

```
JS index.js  X  {} package.json  {} package-lock.json
JS index.js > ...
27   app.post('/login', (req, res) => {
28     let username = req.body.username;
29     let password = req.body.password;
30
31     console.log("body: " + JSON.stringify(req.body));
32
33     console.log("username: "+username);
34     console.log("password: "+password);
35
36     db.execute(
37       "SELECT * FROM users WHERE username = ? AND password = ?",
38       [username, password],
39       (err, result) => {
40         if (err) {
41           res.send({ err: err });
42         }
43         if (result.length > 0) {
44           res.send(result);
45         } else {
46           res.send({ message: "Wrong username/password combination!" });
47         }
48       }
49     );
50   });
51
52   app.post('/register', (req, res) => {
53     let username = req.body.username;
54     let password = req.body.password;
```

```
JS index.js  X  {} package.json  {} package-lock.json
JS index.js > ...
51
52   app.post('/register', (req, res) => {
53     let username = req.body.username;
54     let password = req.body.password;
55
56     console.log("body: " + JSON.stringify(req.body));
57
58     console.log("username: "+username);
59     console.log("password: "+password);
60
61     db.execute(
62       "INSERT INTO users (username, password) VALUES (?,?)",
63       [username, password],
64       (err, result) => {
65         if (err) {
66           res.send({ err: err });
67         }
68         res.send(result);
69       }
70     );
71   });
72 });
73
74   app.listen(4000, () => {
75     console.log("running server");
76   });
77 }
```

ทำการลง middleware

```
devuser@webserver008:/var/www/lab4/server$ npm install express --save
(   ) : idealTree:server: timing idealTree:#root Completed in 645
(   ) : idealTree:server: timing idealTree:#root Completed in 645
(   ) .. idealTree:server: timing idealTree:#root Completed in 645
(   ) .. idealTree:server: timing idealTree:#root Completed in 645
(   ) .. idealTree:server: timing idealTree:#root Completed in 645
(   ) .. idealTree:send: sill placeDep ROOT ms@2.0.0 OK for: debug
(   ) ! idealTree:send: sill placeDep ROOT ms@2.0.0 OK for: debug
(   ) " idealTree:send: timing idealTree:node_modules/send Complete
(   ) .. idealTree:send: timing idealTree:node_modules/send Complete
(   ) .. idealTree:send: timing idealTree:node_modules/send Complete
(   ) : reify:debug: timing reifyNode:node_modules/body-parser Co
(   ) ! reify:object-inspect: timing reifyNode:node_modules/iconv

added 62 packages, and audited 63 packages in 2s

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

found 0 vulnerabilities
devuser@webserver008:/var/www/lab4/server$ npm install --save mysql2
(   ) .. idealTree:server: timing idealTree:#root Completed in 122
(   ) " reify:long: http fetch GET 200 https://registry.npmjs.org
(   ) ! reify:lru-cache: http fetch GET 200 https://registry.npmj
(   ) .. reify:lru-cache: http fetch GET 200 https://registry.npmj

added 11 packages, and audited 74 packages in 2s

11 packages are looking for funding
```

```
devuser@webserver008:/var/www/lab4/server$ npm i -save cors
(   ) .. reify:object-assign: sill tarball no local data for cors@0.0.2
(   ) .. reify:object-assign: sill tarball no local data for cors@0.0.2
(   ) .. reify:cors: http fetch GET 200 https://registry.npmjs.org
(   ) .. reify:cors: http fetch GET 200 https://registry.npmjs.org

added 2 packages, and audited 76 packages in 712ms

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

found 0 vulnerabilities
```

ทำการสร้าง database ชื่อ loginsystem

```
devuser@webserver008:/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 8
Server version: 8.0.35-Ubuntu0.22.04.1 (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 DATABASE IF NOT EXISTS `loginsystem` DEFAULT CHARACTER SET utf8 COLLATE utf8_general_ci;
Query OK, 1 row affected, 2 warnings (0.01 sec)

mysql> USE loginsystem;
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, 1 warning (0.04 sec)
```

ติดตั้งnodemon และ เปิดport:4000

```
devuser@webserver008:/var/www/lab4/server$ nodemon index.js
[nodemon] 3.0.2
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): ***!
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting `node index.js`
running server
[nodemon] restarting due to changes...
[nodemon] starting `node index.js`
running server
^Cdevuser@webserver008:/var/www/lab4/server$ sudo ufw allow 4000
Rule added
Rule added (v6)
```

รั่นและทดสอบ

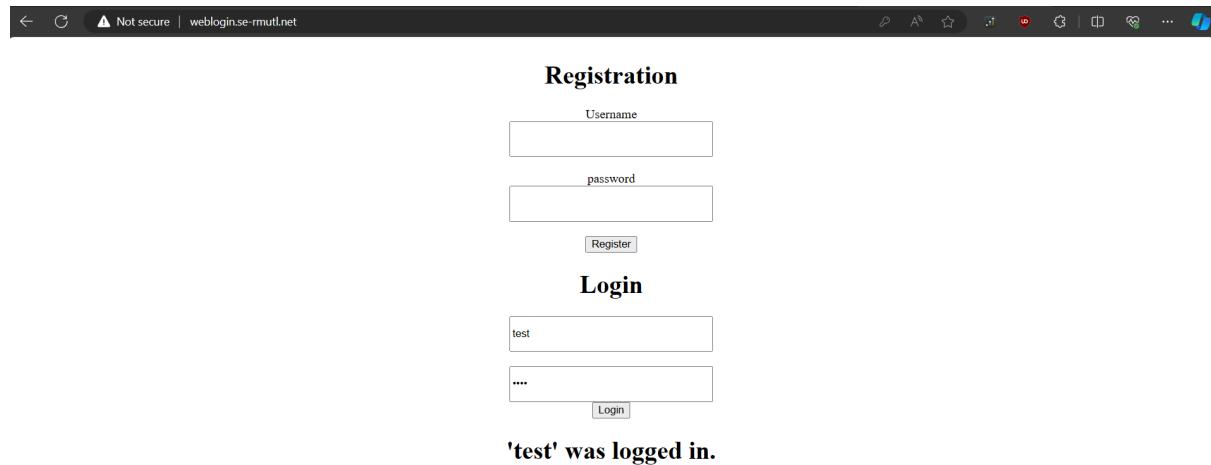
```
devuser@webserver008:/var/www/lab4/server$ nodemon index.js
[nodemon] 3.0.2
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): *.*
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting `node index.js`
running server
```

You can now view **client** in the browser.

Local: http://localhost:3004
On Your Network: http://10.0.2.15:3004

Note that the development build is not optimized.
To create a production build, use `npm run build`.

webpack compiled successfully



Not secure | weblogin.se-rmut.net

Registration

Username

password

Login

Wrong username/password combination!

Not secure | weblogin.se-rmut.net

Registration

Username

password

Login

Duplicate entry 'test' for key 'users.PRIMARY'

Not secure | weblogin.se-rmut.net

Registration

Username

password

Login

'test5' was inserted.

step7

ทำการสร้างไดเรกทอรี่ server

```
devuser@backend008:~$ cd /var/www/lab4/
devuser@backend008:/var/www/lab4$ ls
devuser@backend008:/var/www/lab4$ mkdir server
mkdir: cannot create directory 'server': Permission denied
devuser@backend008:/var/www/lab4$ sudo mkdir server
```

เข้าไปใน server สร้างไฟล์ package.json ด้วย npm init

```
devuser@backend008:/var/www/lab4$ cd server/
devuser@backend008:/var/www/lab4/server$ npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See `npm help init` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (server)
version: (1.0.0)
description:
entry point: (index.js)
test command:
git repository:
keywords:
author:
license: (ISC)
About to write to /var/www/lab4/server/package.json:

{
  "name": "server",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \\\"Error: no test specified\\\" && exit 1"
  },
  "author": "",
  "license": "ISC"
}
```

```
└─> middleware express mysql2 cors
```

```
devuser@backend008:/var/www/lab4/server$ npm install express --save
added 62 packages, and audited 63 packages in 5s
11 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
devuser@backend008:/var/www/lab4/server$ npm install --save mysql2
added 11 packages, and audited 74 packages in 6s
11 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
devuser@backend008:/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
```

```
└─> nodemon
```

```
devuser@backend008:/var/www/lab4/server$ ^[[200~sudo npm install -g nodemon
sudo: command not found
devuser@backend008:/var/www/lab4/server$ sudo npm install -g nodemon
added 33 packages in 10s
3 packages are looking for funding
  run `npm fund` for details
npm notice
npm notice New patch version of npm available! 10.2.3 -> 10.2.5
npm notice Changelog: https://github.com/npm/cli/releases/tag/v10.2.5
npm notice Run npm install -g npm@10.2.5 to update!
npm notice
```

setup example_user

```
devuser@backend008:/var/www/lab4/server$ 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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Oracle is a registered trademark of Oracle Corporation and/or its
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 'example_user'@'%' IDENTIFIED BY 'P@ssw0rd@2023';
Query OK, 0 rows affected (0.06 sec)

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

mysql> GRANT ALL ON nodelogin.* TO 'example_user'@'%';
Query OK, 0 rows affected (0.01 sec)
```

setup database

```
mysql> CREATE DATABASE IF NOT EXISTS `loginsystem` DEFAULT CHARACTER SET utf
8 COLLATE utf8_general_ci;
Query OK, 1 row affected, 2 warnings (0.01 sec)

mysql> USE loginsystem;
Database changed
mysql> GRANT ALL ON nodelogin.* TO 'example_user'@'%';
Query OK, 0 rows affected (0.01 sec)

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, 1 warning (0.14 sec)

mysql> INSERT INTO `users`(`username`, `password`) VALUES ('test', 'test');
Query OK, 1 row affected (0.02 sec)

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

```
devuser@backend008:/var/www/lab4/server$ sudo ufw allow 4000
Rule added
Rule added (v6)
```

ทำการเปลี่ยน port และ ip เป็น 192.168.56.105:4000

The screenshot shows a code editor with two tabs: 'App.js' and 'package.json'. The 'App.js' tab is active and displays the following code:

```
src > JS App.js > App > register > then() callback
  1 import React, { useEffect, useState } from "react";
  2 import Axios from 'axios';
  3 import './App.css';
  4 function App() {
  5   const [usernameReg, setUsernameReg] = useState("");
  6   const [passwordReg, setPasswordReg] = useState("");
  7   const [username, setUsername] = useState("");
  8   const [password, setPassword] = useState("");
  9   const [loginStatus, setLoginStatus] = useState("");
 10   const register = () => {
 11     Axios.post("http://192.168.56.105:4000/register", {
 12       username: usernameReg,
 13       password: passwordReg,
 14     }).then((response) => {
 15       console.log(response);
 16
 17       if (!response.data.err) {
 18         setLoginStatus("'" + usernameReg + "' was inserted.");
 19       } else {
 20         setLoginStatus(response.data.err.sqlMessage);
 21       }
 22     });
 23   };
 24 }
 25
 26 const login = () => {
 27   Axios.post("http://192.168.56.105:4000/login", {
 28     username: username,
 29     password: password,
 30   }).then((response) => {
 31     console.log(response);
 32     //console.log("response.data.message: "+response.data[0].message);
 33
 34     if (!response.data.message) {
 35       setLoginStatus("'" + response.data[0].username + "' was logged in.");
 36     } else {
 37       setLoginStatus(response.data.message);
```

เปิดvscode และไปที่เครื่อง backend สร้าง index.js ที่ /var/www/lab4/server

The screenshot shows the Visual Studio Code interface. On the left, the Explorer sidebar lists files: package.json, index.js, node_modules, package-lock.json, and package.json. The main area displays the content of index.js:

```
1 const express = require("express");
2 const mysql = require("mysql2");
3 const cors = require("cors");
4
5 const app = express();
6
7 const db = mysql.createConnection({
8   host: 'localhost',
9   user: 'example_user',
10  password: 'P@ssw0rd@2023',
11  database: 'loginsystem',
12});
13
14 app.use(express.json());
15 app.use(
16   cors([
17     {
18       origin: ["http://weblogin.se-rmutl.net/"],
19       methods: ["GET", "POST"],
20       credentials: true,
21     }
22   ]);
23
24 app.get('/', (req, res) => {
25   console.log("Hello from API");
26 });
27
28 app.post('/login', (req, res) => {
29   let username = req.body.username;
30   let password = req.body.password;
31
32   console.log("body: " + JSON.stringify(req.body));
33
34   console.log("username: "+username);
35   console.log("password: "+password);
36 });
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```

Not secure | weblogin.se-rmut.net

Registration

Username

password

Login

'test' was logged in.

Not secure | weblogin.se-rmut.net

Registration

Username

password

Login

Wrong username/password combination!

Not secure | weblogin.se-rmut.net

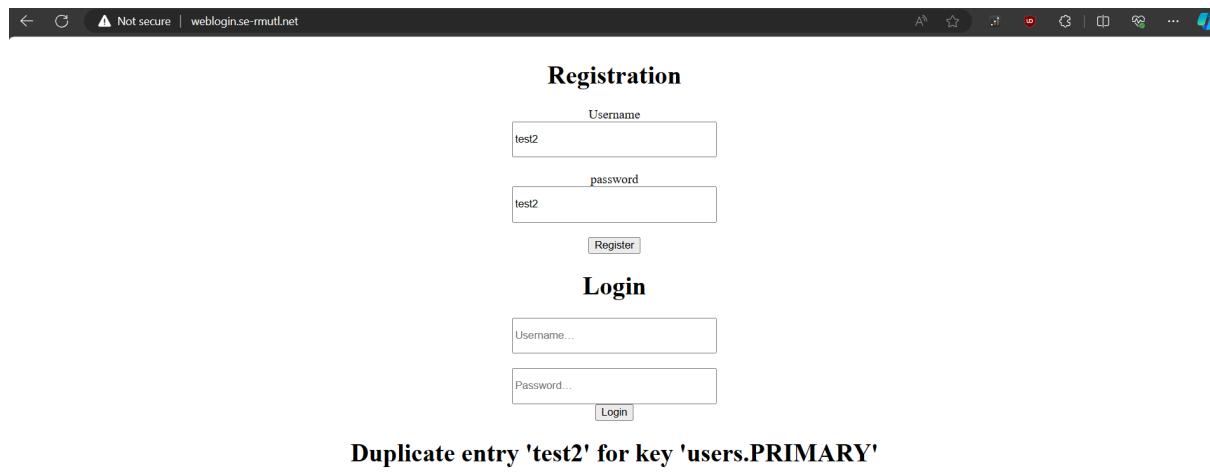
Registration

Username

password

Login

'test2' was inserted.



index.js code

```
const express = require("express");
const mysql = require("mysql2");
const cors = require("cors");

const app = express();

const db = mysql.createConnection({
    host: 'localhost',
    user: 'example_user',
    password: 'P@ssw0rd@2023',
    database: 'loginsystem',
});

app.use(express.json());
app.use(
    cors({
        origin: ["http://weblogin.se-rmutil.net"],
        methods: ["GET", "POST"],
        credentials: true,
    })
);

app.get('/', (req, res) => {
    console.log("Hello from API");
});

app.post('/login', (req, res) => {
    let username = req.body.username;
    let password = req.body.password;
```

```
console.log("body: "+ JSON.stringify(req.body));

console.log("username: "+username);
console.log("password: "+password);

db.execute(
    "SELECT * FROM users WHERE username = ? AND password = ?",
    [username, password],
    (err, result) => {
        if (err) {
            res.send({ err: err });
        }
        if (result.length > 0) {
            res.send(result);
        } else {
            res.send({ message: "Wrong username/password
comination!" });
        }
    );
});

app.post('/register', (req, res) => {
    let username = req.body.username;
    let password = req.body.password;

    console.log("body: "+ JSON.stringify(req.body));

    console.log("username: "+username);
    console.log("password: "+password);

    db.execute(
        "INSERT INTO users (username, password) VALUES (?,?)",
        [username, password],
        (err, result) => {
            if (err) {
                res.send({ err: err });
            }
            res.send(result);
        }
    );
});
```

```
) ;

app.listen(4000, () => {
    console.log("running server");
});
```

```
app.js code
import React, { useEffect, useState } from "react";
import Axios from 'axios';
import './App.css';
function App() {
const [usernameReg, setUsernameReg] = useState("");
const [passwordReg, setPasswordReg] = useState ("");
const [username, setUsername] = useState("");
const [password, setPassword] = useState ("");
const [loginStatus, setLoginStatus] = useState("");
const register = () => {
    Axios.post("http://10.211.55.7:4000/register", {
        username: usernameReg,
        password: passwordReg,
    }).then((response) => {
        console.log(response);

        if (!response.data.err) {
            setLoginStatus("'" +usernameReg + "' was inserted.");
        } else {
            setLoginStatus(response.data.err.sqlMessage);
        }
    });
};

const login = () => {
    Axios.post("http://10.211.55.7:4000/login", {
        username: username,
        password: password,
```

```
}).then((response) => {
    console.log(response);
    //console.log("response.data.message: "+response.data[0].message);

    if (!response.data.message) {
        setLoginStatus("'" +response.data[0].username + "' was logged
in.");
    } else {
        setLoginStatus(response.data.message);
    }
});

}) ;
};

return (
    <div className="App">
        <div className="registration">
            <h1>Registration</h1>
            <label>Username</label>
            <input
                type="text"
                onChange={(e) => {
                    setUsernameReg(e.target.value);
                }}
            /><br/>
            <label>password</label>
            <input
                type="text"
                onChange={(e) =>{
                    setPasswordReg(e.target.value);
                }}
            /> <br />
            <button onClick={register} > Register</button>
        </div>
        <div className="login">
            <h1>Login</h1>
            <input
                type="text"
                placeholder="Username..."
```

```
        onChange = { (e) => {
            setUsername (e.target.value);
        }
    /> <br/>

<input
    type="password"
    placeholder="Password..."
    onChange = { (e) => {
        setPassword (e.target.value);
    }
}
/>
<button onClick={login}>Login</button>
</div>
<h1> {loginStatus}</h1>
</div>
);

}

export default App;
```