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LAB 2

1.ทำการเพิ่ม user

```
devuser@server:~$ adduser jakkrapart
adduser: Only root may add a user or group to the system.
devuser@server:~$ sudo adduser jakkrapart
[sudo] password for devuser:
Sorry, try again.
[sudo] password for devuser:
Adding user `jakkrapart' ...
Adding new group `jakkrapart' (1001) ...
Adding new user `jakkrapart' (1001) with group `jakkrapart' ...
Creating home directory `/home/jakkrapart' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for jakkrapart
Enter the new value, or press ENTER for the default
        Full Name []: Jakkrapart inpook
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
```

2.ทำให้user สามารถใช้คำสั่ง sudo ได้

```
devuser@server:~$ sudo usermod -aG sudo jakkrapart
```

3.เช็คว่ามีแอพไหนบ้างที่อยู่ใน firewall

```
devuser@server:~$ sudo ufw app list
Available applications:
  OpenSSH
```

4.ทำการเพิ่มกฎให้ firewall สำหรับ OpenSSH

```
devuser@server:~$ sudo ufw allow OpenSSH
Rules updated
Rules updated (v6)
```

5.ทำการเปิด firewall

```
devuser@server:~$ sudo ufw enable
Firewall is active and enabled on system startup
```

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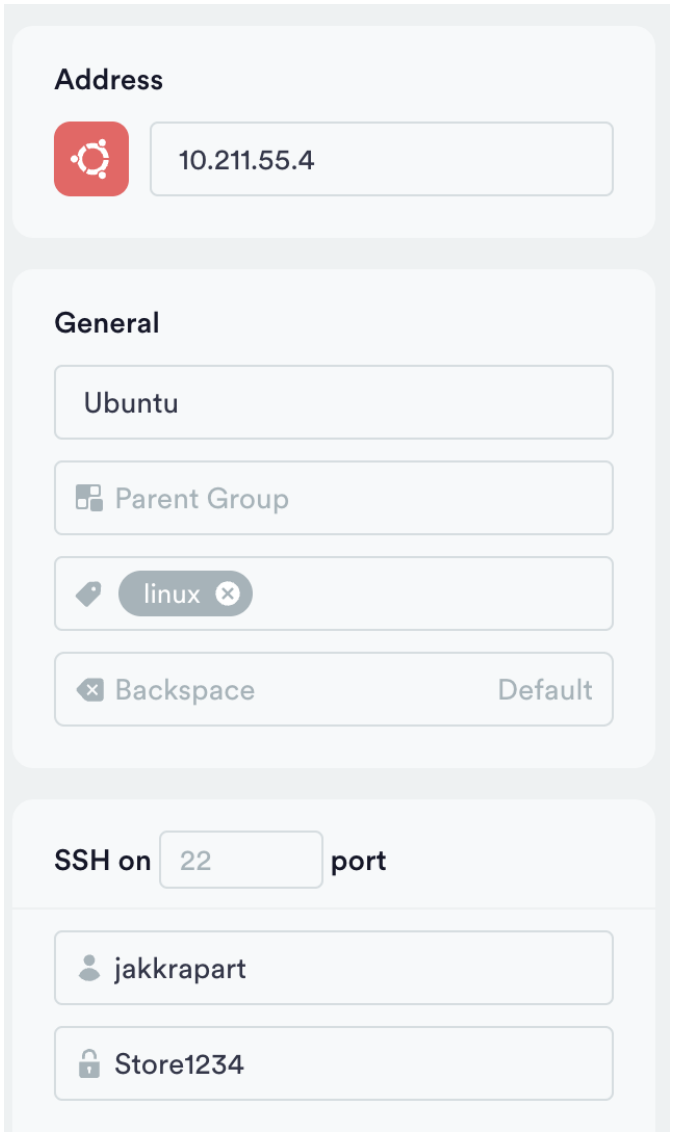
6.เช็คสถานะ firewall ทั้งหมด

```
devuser@server:~$ sudo ufw status
Status: active

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

7.ทำการ remote ssh ไปยัง server



8.ทำการอัพเดตระบบ

```
jakkrapart@server:~$ sudo apt update
[sudo] password for jakkrapart:
Sorry, try again.
[sudo] password for jakkrapart:
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
38 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

9.ทำการติดตั้ง apache

```
jakkrapart@server:~$ sudo apt install apache2 -y
```

10.ทำการเพิ่มกฎfirewall ให้กับ Apache และเช็คสถานะ

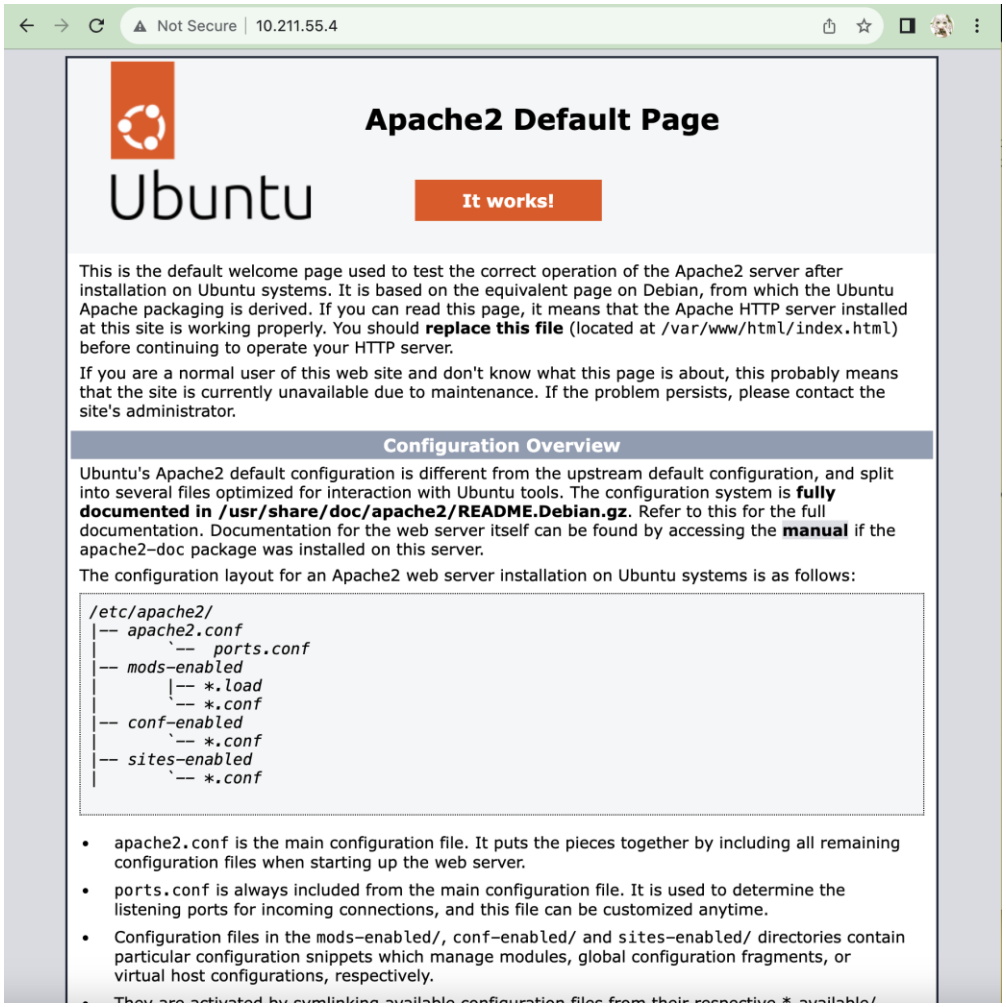
```
jakkrapart@server:~$ sudo ufw app list
Available applications:
  Apache
  Apache Full
  Apache Secure
  OpenSSH
```

```
jakkrapart@server:~$ sudo ufw allow in "Apache"
Rule added
Rule added (v6)
```

```
jakkrapart@server:~$ sudo ufw status
Status: active

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

11. ทดสอบ webserver Apache2



12.ทำการติดตั้งฐานข้อมูล Mysql

```
jakkrapart@server:~$ sudo apt install mysql-server -y
```

13.กำหนดรหัสเริ่มต้นให้กับฐานข้อมูล roor password

```
jakkrapart@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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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 WITH mysql_native_password BY 'password';
Query OK, 0 rows affected (0.00 sec)
```

14. ทำการตั้งค่าระบบความปลอดภัย เช่นมาตรฐานของรหัสผ่าน ใช้remote lสำหรับ root หรือไม่ database จำลอง user จำลอง

```
jakkrapart@server:~$ sudo mysql_secure_installation

Securing the MySQL server deployment.

Enter password for user root:

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

Please enter 0 = LOW, 1 = MEDIUM and 2 = STRONG: 1
Using existing password for root.

Estimated strength of the password: 50
Change the password for root ? ((Press y|Y for Yes, any other key for No) :

 ... skipping.
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
Success.

By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.


Remove test database and access to it? (Press y|Y for Yes, any other key for No) : Y
 - Dropping test database...
Success.

 - Removing privileges on test database...
Success.

Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : Y
Success.
```

15. ทำการลองเข้าฐานข้อมูลด้วยรหัส

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```
jakkrapart@server:~$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 15
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.
```

16.ทำการลง php และ php libery สำหรับ apache mysql

```
jakkrapart@server:~$ sudo apt install php libapache2-mod-php php-mysql -y
```

17.เช็ค version ของ php

```
jakkrapart@server:~$ php -v
PHP 8.1.2-1ubuntu2.14 (cli) (built: Aug 18 2023 11:41:11) (NTS)
Copyright (c) The PHP Group
Zend Engine v4.1.2, Copyright (c) Zend Technologies
    with Zend OPcache v8.1.2-1ubuntu2.14, Copyright (c), by Zend Technologies
```

18.ทำการสร้าง virtual host สำหรับเว็ปของคุณ โดยการสร้างdirectoryใน /var/www/ชื่อdirectory

```
jakkrapart@server:~$ sudo mkdir /var/www/lab2
jakkrapart@server:~$ sudo chown -R $USER:$USER /var/www/lab2
```

เช็คdirectory

19.ทำการกำหนดตั้งค่าให้กับ apache สำหรับเว็ปเราใน /etc/apache2/sites-available/ชื่อ.conf

```
jakkrapart@server:~$ sudo nano /etc/apache2/sites-available/lab2.conf
jakkrapart@server:~$ sudo more /etc/apache2/sites-available/lab2.conf
<VirtualHost *:80>
    ServerName lab2
    ServerAlias www.lab2.com
    ServerAdmin webmaster@localhost
    DocumentRoot /var/www/lab2
    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

20.ทำการเปิด virtual host

```
jakkrapart@server:~$ sudo a2ensite lab2
Enabling site lab2.
To activate the new configuration, you need to run:
  systemctl reload apache2
```

21.ทำการปิด virtual host เริ่มต้นของ apache

```
jakkrapart@server:~$ sudo a2dissite 000-default
Site 000-default disabled.
To activate the new configuration, you need to run:
  systemctl reload apache2
```

22.รีโหลด service ของ apache

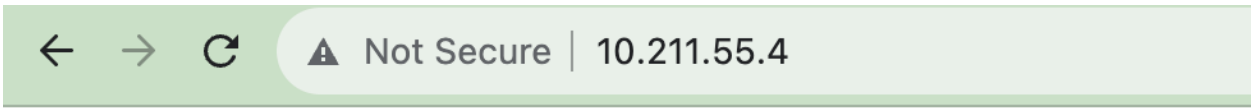
```
jakkrapart@server:~$ sudo systemctl reload apache2
```

23.ทำการกดลองเพิ่ม file web html ลองในโฟลเดอร์ web ของเรา

```
jakkrapart@server:~$ more /var/www/lab2/index.html
<html>
  <head>
    <title>lab2 website</title>
  </head>
  <body>
    <h1>Hello World! This is lab2 page</h1>

    <p>This is the landing page of <strong> LAB2 </strong>.</p>
  </body>
</html>
```

24.ลองเปิดหน้าเว็ป



Hello World! This is lab2 page

This is the landing page of **LAB2** .

25.ทำการเพิ่มความสำคัญของนามสกุลไฟล์ php ให้เปิดก่อน

```
jakkrapart@server:~$ sudo nano /etc/apache2/mods-enabled/dir.conf
jakkrapart@server:~$ sudo more /etc/apache2/mods-enabled/dir.conf
<IfModule mod_dir.c>
        DirectoryIndex index.php index.html index.cgi index.pl index.php index.xhtml index.htm
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
jakkrapart@server:~$ sudo systemctl reload apache2
```

26.ทดลองสร้างไฟล์ php โดนให้คำสั่งดึงข้อมูล php

```
jakkrapart@server:~$ nano /var/www/lab2/info.php
jakkrapart@server:~$ more /var/www/lab2/info.php
<?php
phpinfo();
```

27.ทดลองเข้าไปที่ไฟล์ php ในเว็ป

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PHP Version 8.1.2-1ubuntu2.14

System	Linux server 5.15.0-89-generic #99-Ubuntu SMP Mon Oct 30 23:43:36 UTC 2023 aarch64
Build Date	Aug 18 2023 11:41:11
Build System	Linux
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/8.1/apache2
Loaded Configuration File	/etc/php/8.1/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/8.1/apache2/conf.d
Additional .ini files parsed	/etc/php/8.1/apache2/conf.d/10-mysqlnd.ini, /etc/php/8.1/apache2/conf.d/10-opcache.ini, /etc/php/8.1/apache2/conf.d/10-pdo.ini, /etc/php/8.1/apache2/conf.d/20-calendar.ini, /etc/php/8.1/apache2/conf.d/20-ctype.ini, /etc/php/8.1/apache2/conf.d/20-exif.ini, /etc/php/8.1/apache2/conf.d/20 ffi.ini, /etc/php/8.1/apache2/conf.d/20-fileinfo.ini, /etc/php/8.1/apache2/conf.d/20-ftp.ini, /etc/php/8.1/apache2/conf.d/20-gettext.ini, /etc/php/8.1/apache2/conf.d/20-iconv.ini, /etc/php/8.1/apache2/conf.d/20-mysqli.ini, /etc/php/8.1/apache2/conf.d/20-pdo_mysql.ini, /etc/php/8.1/apache2/conf.d/20-phar.ini, /etc/php/8.1/apache2/conf.d/20-posix.ini, /etc/php/8.1/apache2/conf.d/2(readline.ini, /etc/php/8.1/apache2/conf.d/20-shmop.ini, /etc/php/8.1/apache2/conf.d/20-sockets.ini, /etc/php/8.1/apache2/conf.d/20-sysvmsg.ini, /etc/php/8.1/apache2/conf.d/20-sysvsem.ini, /etc/php/8.1/apache2/conf.d/20-sysvshm.ini, /etc/php/8.1/apache2/conf.d/20-tokenizer.ini
PHP API	20210902
PHP Extension	20210902
Zend Extension	420210902
Zend Extension Build	API420210902,NTS
PHP Extension Build	API20210902,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
IPv6 Support	enabled
DTrace Support	disabled
Registered PHP Streams	https, ftps, compress.zlib, php, file, glob, data, http, ftp, phar
Registered Stream Socket Transports	tcp, udp, unix, udg, ssl, tls, tlsv1.0, tlsv1.1, tlsv1.2, tlsv1.3
Registered Stream Filters	zlib.*, string.rot13, string.toupper, string.tolower, convert.*, consumed, dechunk, convert.iconv.*

28.สร้างฐานข้อมูล Lab2

```
mysql> CREATE DATABASE lab2;
Query OK, 1 row affected (0.00 sec)
```

29.สร้าง user ที่สามารถเข้าถึงข้อมูล ฐานข้อมูลได้

```
mysql> CREATE USER 'store'@'%' IDENTIFIED BY 'P@ssw0rd@2023';
Query OK, 0 rows affected (0.01 sec)
```

30.ให้สิทธ์การเขาถึงทั้งหมดของฐานข้อมูลให้ user ที่สร้าง

```
mysql> GRANT ALL ON lab2.* TO 'store'@'%';
Query OK, 0 rows affected (0.00 sec)
```

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31.เข้า mysql โดย user ที่พึ่งสร้าง

```
jakkrapart@server:~$ mysql -u store -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 18
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 |
| lab2               |
| performance_schema |
+--------------------+
3 rows in set (0.00 sec)
```

32สร้างตารางในฐานข้อมูล

```
mysql> CREATE TABLE lab2.todo_list (
    -> item_id INT AUTO_INCREMENT,
    -> content VARCHAR(255),
    -> PRIMARY KEY(item_id)
    -> );
Query OK, 0 rows affected (0.02 sec)
```

33.ทดสอบเพิ่มข้อมูลในฐานข้อมูล

```
mysql> INSERT INTO lab2.todo_list (content) VALUES ("My first important item");
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO lab2.todo_list (content) VALUES ("My second important item");
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO lab2.todo_list (content) VALUES ("My third important item");
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO lab2.todo_list (content) VALUES ("My n important item");
Query OK, 1 row affected (0.01 sec)
```

35.ดูข้อมูบที่เพิ่มเข้ามา

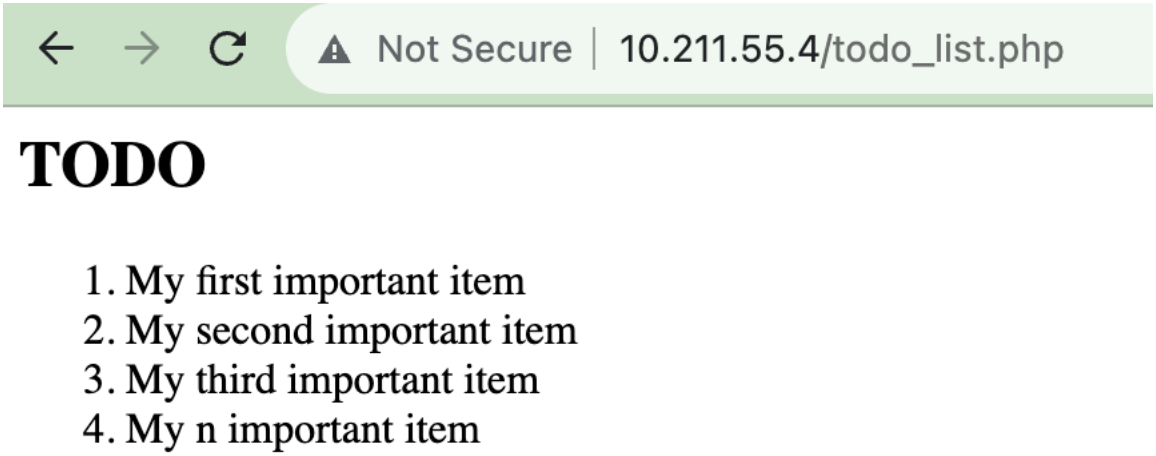
```
mysql> select * from lab2.todo_list
    -> ;
+---------+--------------------------+
| item_id | content                  |
+---------+--------------------------+
|       1 | My first important item  |
|       2 | My second important item |
|       3 | My third important item  |
|       4 | My n important item      |
+---------+--------------------------+
4 rows in set (0.01 sec)
```

36.สร้างไฟล์ php เพื่อเชื่อมต่อฐานข้อมูลและดึงข้อมูลในฐานข้อมมูลลงมาบนเว็ป

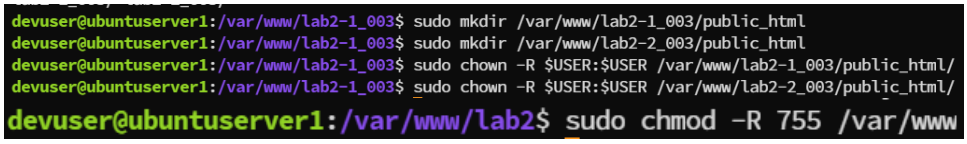
```
jakkrapart@server:~$ nano /var/www/lab2/todo_list.php
jakkrapart@server:~$ more /var/www/lab2/todo_list.php
<?php
$user = "store";
$password = "P@ssw0rd@2023";
$database = "lab2";
$table = "todo_list";

try{
        $db = new PDO("mysql:host=localhost;dbname=$database",$user,$password);
        echo "<h2>TODO</h2><ol>";
        foreach($db->query("SELECT content FROM $table") as $row){
          echo "<li>" . $row['content'] . "</li>";
        }
        echo "</ol>";
}catch (PDOException $e){
        print "Error!: " . $e->getMessage() . "br/";
        die();
}
```

37.ลองเปิดเว็ปเช็คข้อมูลที่ดึงมา



38.Creating the Directory Structure and Granting Permissions



39.สร้างหน้าเริ่มต้นของ Virtual Host

```
devuser@ubuntuserver1:/var/www/lab2-1_003/public_html$ nano index.html
devuser@ubuntuserver1:/var/www/lab2-1_003/public_html$ cat index.html
<html>
  <head>
    <title>Welcome to lab2-1-003!</title>
  </head>
  <body>
    <h1>Success! The lab2-1-003 virtual host is working!</h1>
  </body>
</html>
devuser@ubuntuserver1:/etc/apache2/sites-available$ cat /var/www/lab2-2_003/public_html/index.html
<html>
  <head>
    <title>Welcome to lab2-2-003!</title>
  </head>
  <body>
    <h1>Success! The lab2-2-003 virtual host is working!</h1>
  </body>
</html>
```

40.การสร้างไฟล์โฮสต์เสมือนใหม่

```
devuser@ubuntuserver1:/etc/apache2/sites-available$ sudo nano /etc/apache2/sites-available/lab2-1_003.conf
devuser@ubuntuserver1:/etc/apache2/sites-available$ sudo nano /etc/apache2/sites-available/lab2-1_003.conf
devuser@ubuntuserver1:/etc/apache2/sites-available$ sudo nano /etc/apache2/sites-available/lab2-2_003.conf
devuser@ubuntuserver1:/etc/apache2/sites-available$ sudo cat /etc/apache2/sites-available/lab2-1_003.conf
<VirtualHost *:80>
        ServerAdmin admin@lab2-1_003
        ServerName lab2-1_003
        ServerAlias www.lab2-1_003
        DocumentRoot /var/www/lab2-1_003/public_html/

        ErrorLog ${APACHE_LOG_DIR}/error.log
        CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>

devuser@ubuntuserver1:/etc/apache2/sites-available$ sudo cat /etc/apache2/sites-available/lab2-2_003.conf
<VirtualHost *:80>
        ServerAdmin admin@lab2-2_003
        ServerName lab2-2_003
        ServerAlias www.lab2-2_003
        DocumentRoot /var/www/lab2-2_003/public_html/

        ErrorLog ${APACHE_LOG_DIR}/error.log
        CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

41.การเปิดใช้งานไฟล์โฮสต์เสมือนใหม่

```
devuser@ubuntuserver1:/etc/apache2/sites-available$ sudo apache2ctl configtest
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to
 suppress this message
Syntax OK
devuser@ubuntuserver1:/etc/apache2/sites-available$ systemctl reload apache2
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ===
Authentication is required to reload 'apache2.service'.
Authenticating as: Dev User (devuser)
Password:
==== AUTHENTICATION COMPLETE ===
devuser@ubuntuserver1:/etc/apache2/sites-available$ sudo systemctl restart apache2
devuser@ubuntuserver1:/etc/apache2/sites-available$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Wed 2023-12-06 08:33:53 UTC; 5s ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 14015 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 14019 (apache2)
      Tasks: 6 (limit: 4558)
     Memory: 10.2M
        CPU: 41ms
     CGroup: /system.slice/apache2.service
             ├─14019 /usr/sbin/apache2 -k start
             ├─14021 /usr/sbin/apache2 -k start
             ├─14022 /usr/sbin/apache2 -k start
             ├─14023 /usr/sbin/apache2 -k start
             ├─14024 /usr/sbin/apache2 -k start
             └─14025 /usr/sbin/apache2 -k start

Dec 06 08:33:53 ubuntuserver1 systemd[1]: Starting The Apache HTTP Server...
Dec 06 08:33:53 ubuntuserver1 apachectl[14018]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.
```

42.การตั้งค่าไฟล์โฮสต์ท้องถิ่น

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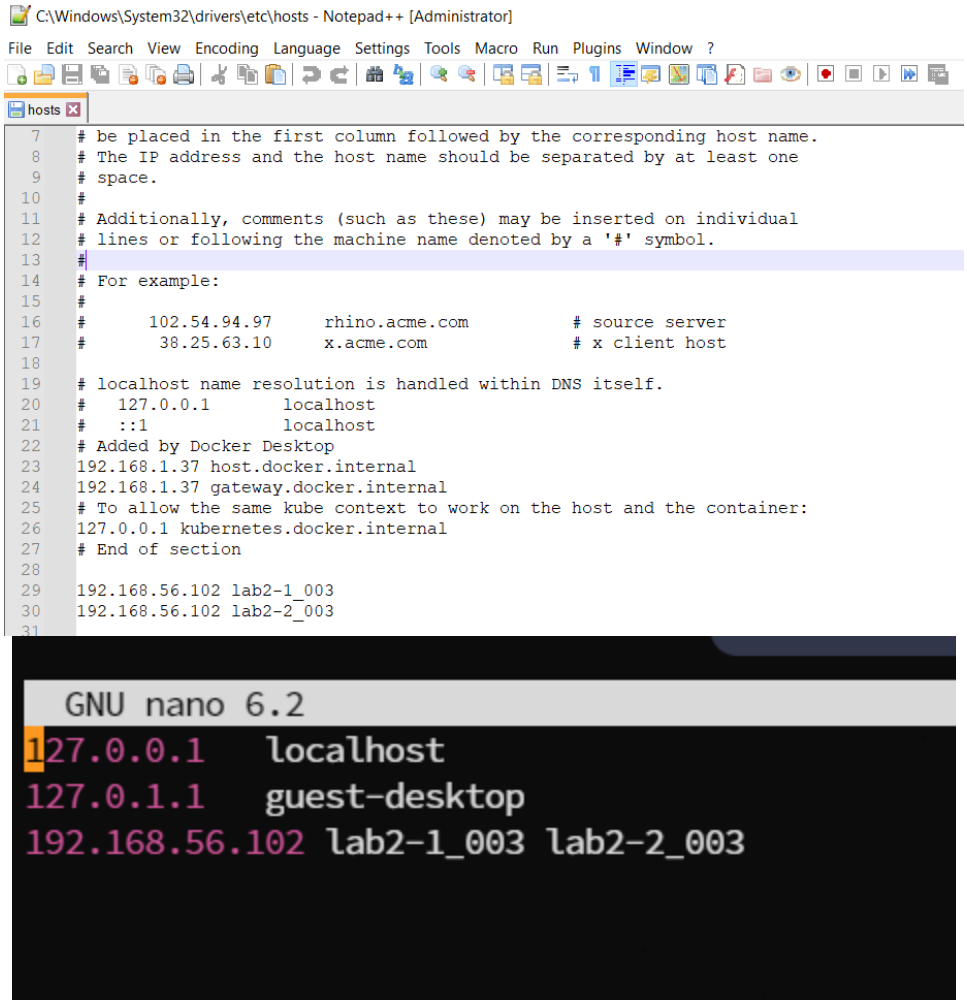

43.ทดสอบผลลัพธ์ของคุณ

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