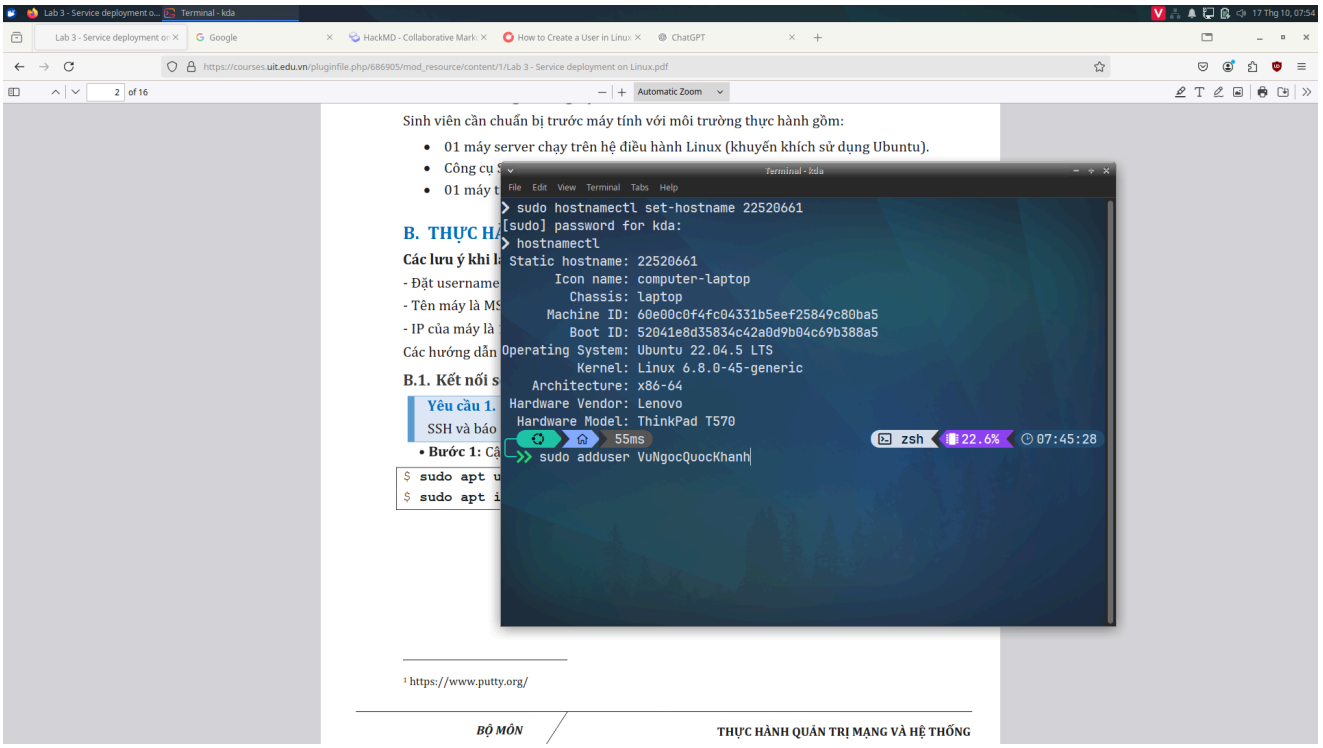
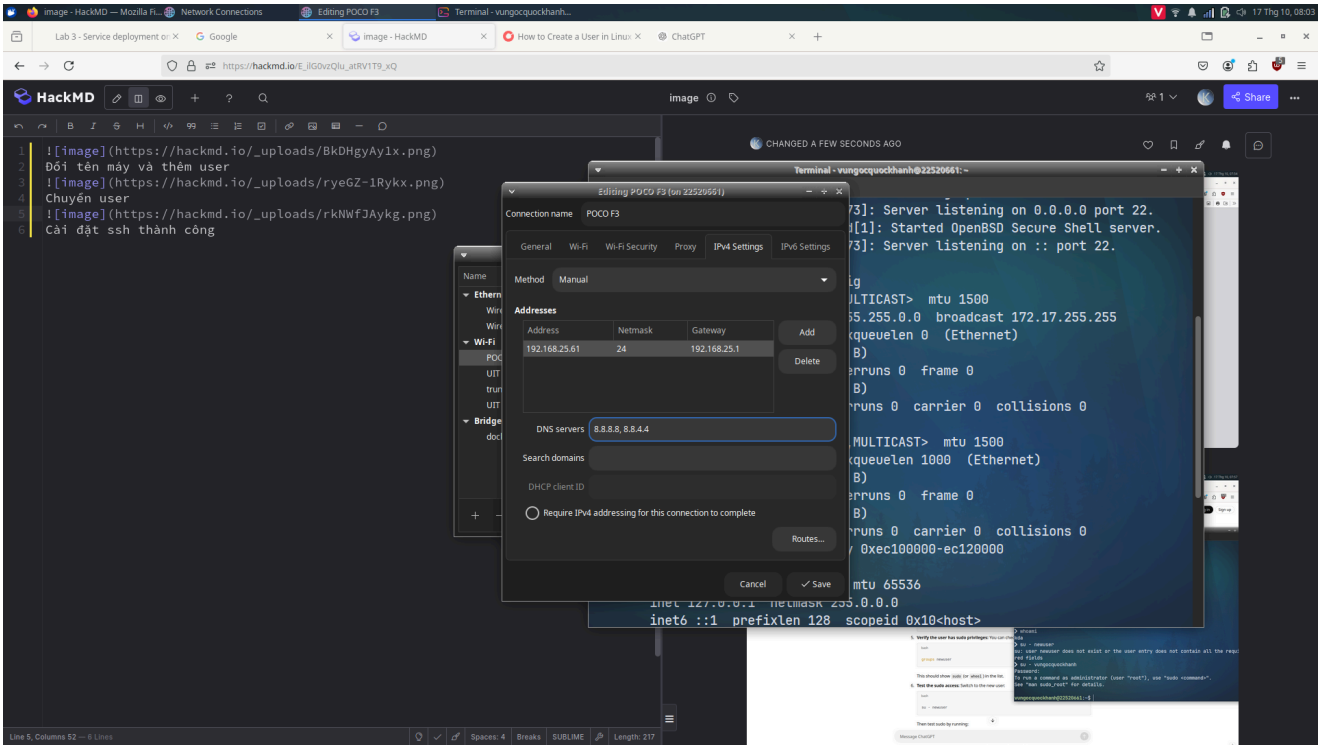
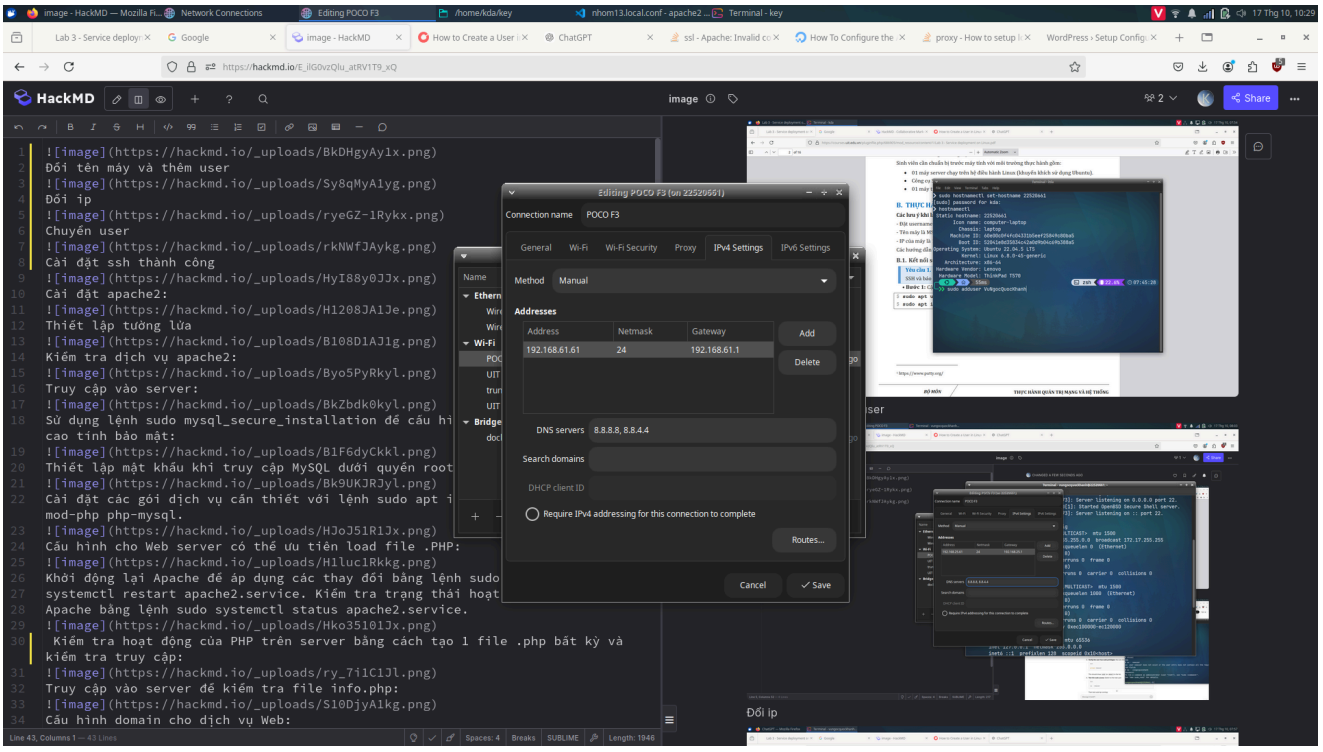
Lab 3 - Triển khai các dịch vụ trên Linux



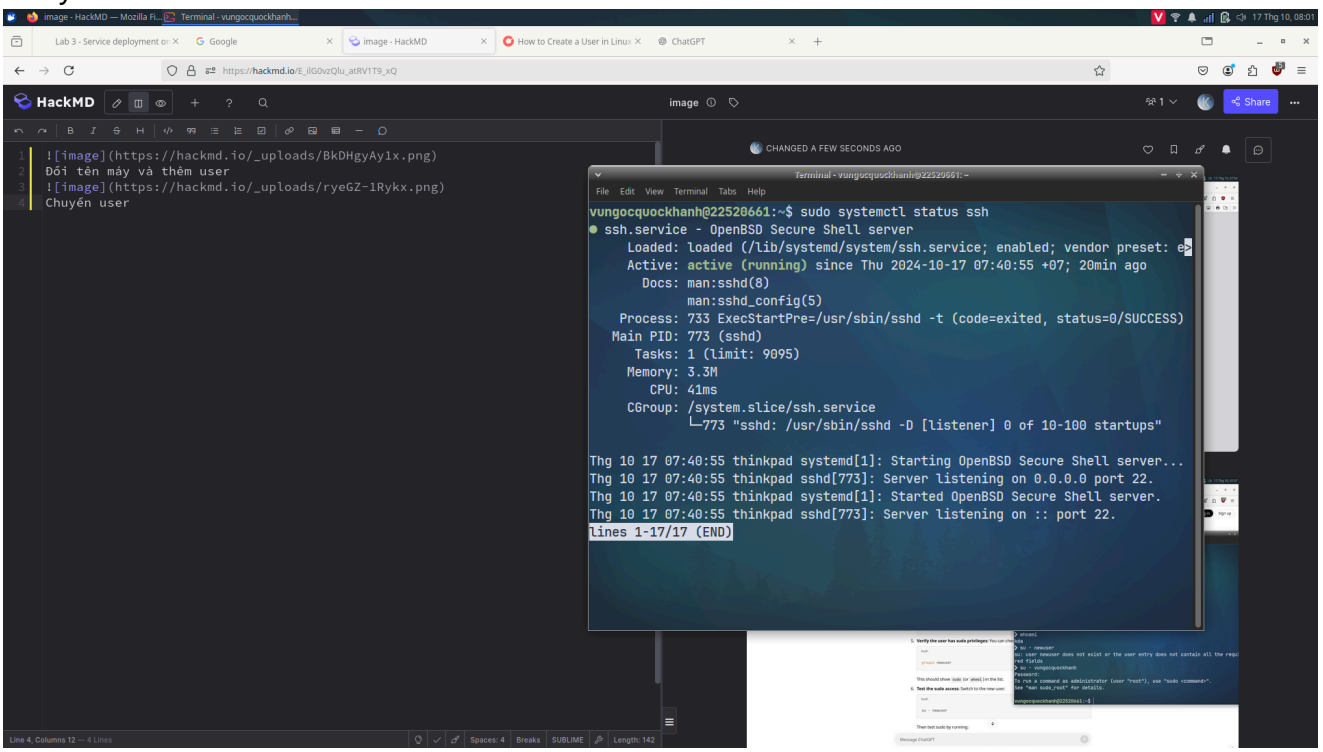
Đổi tên máy và thêm user



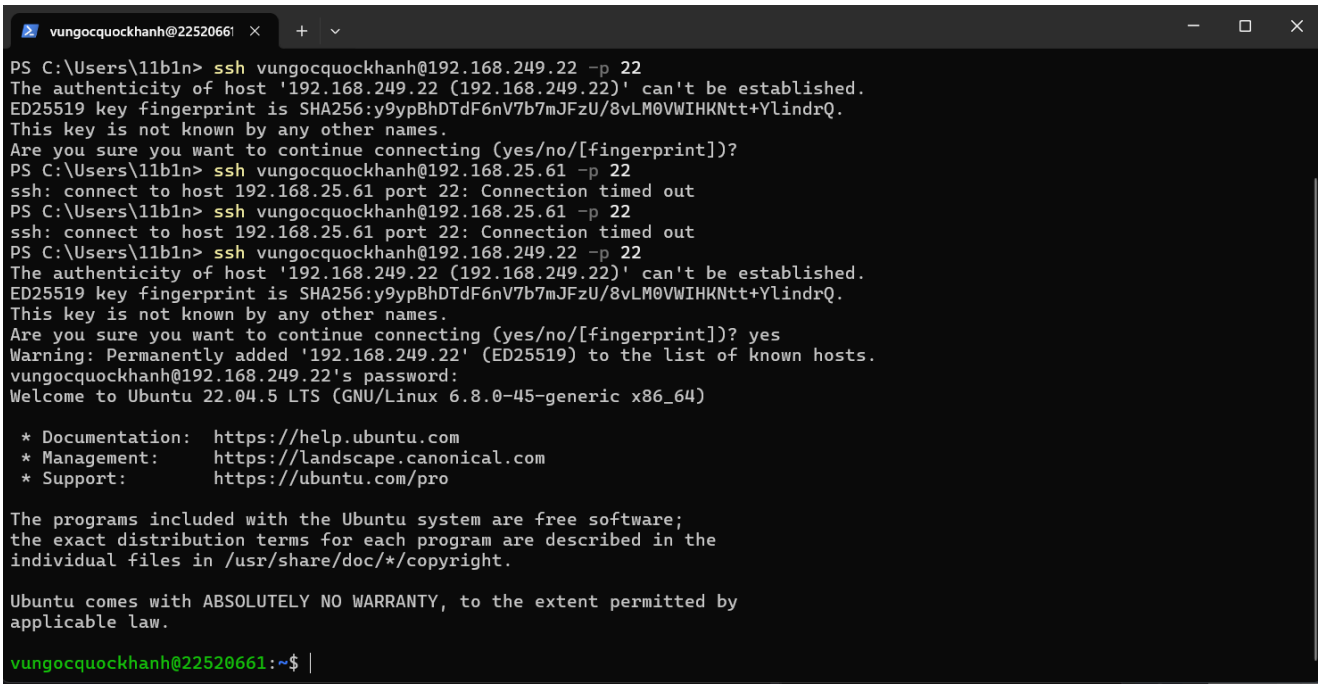
Đổi ip



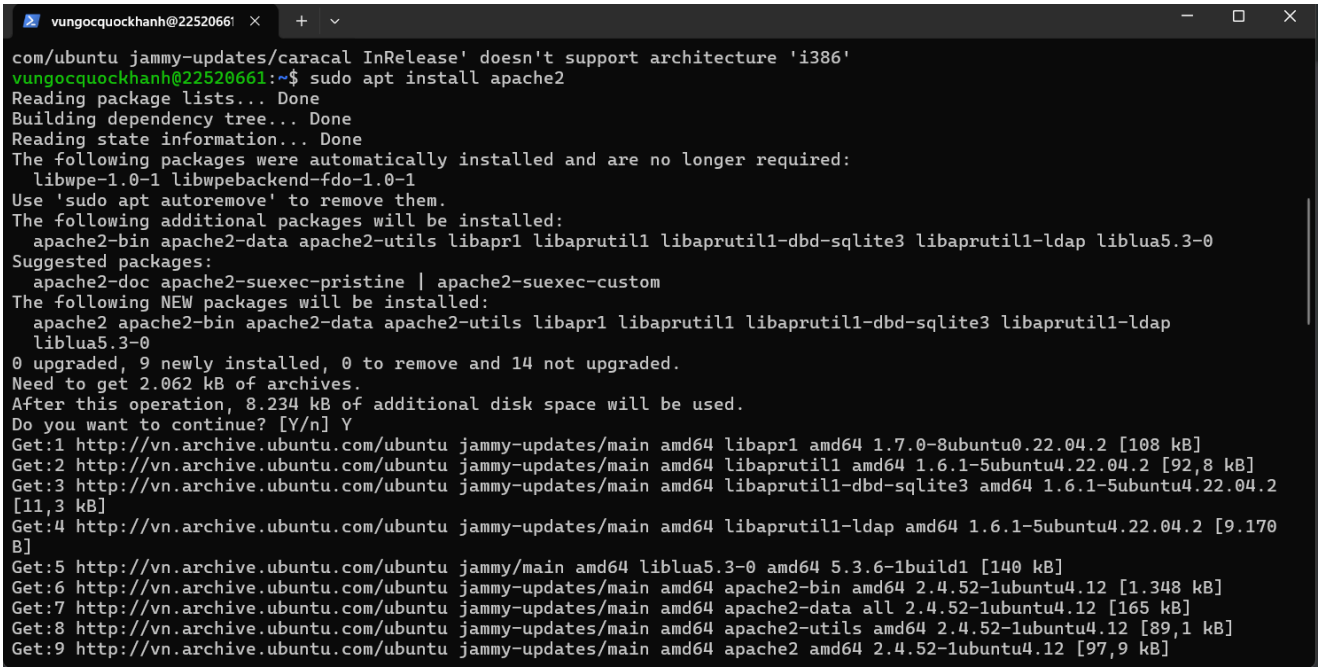
Chuyển user



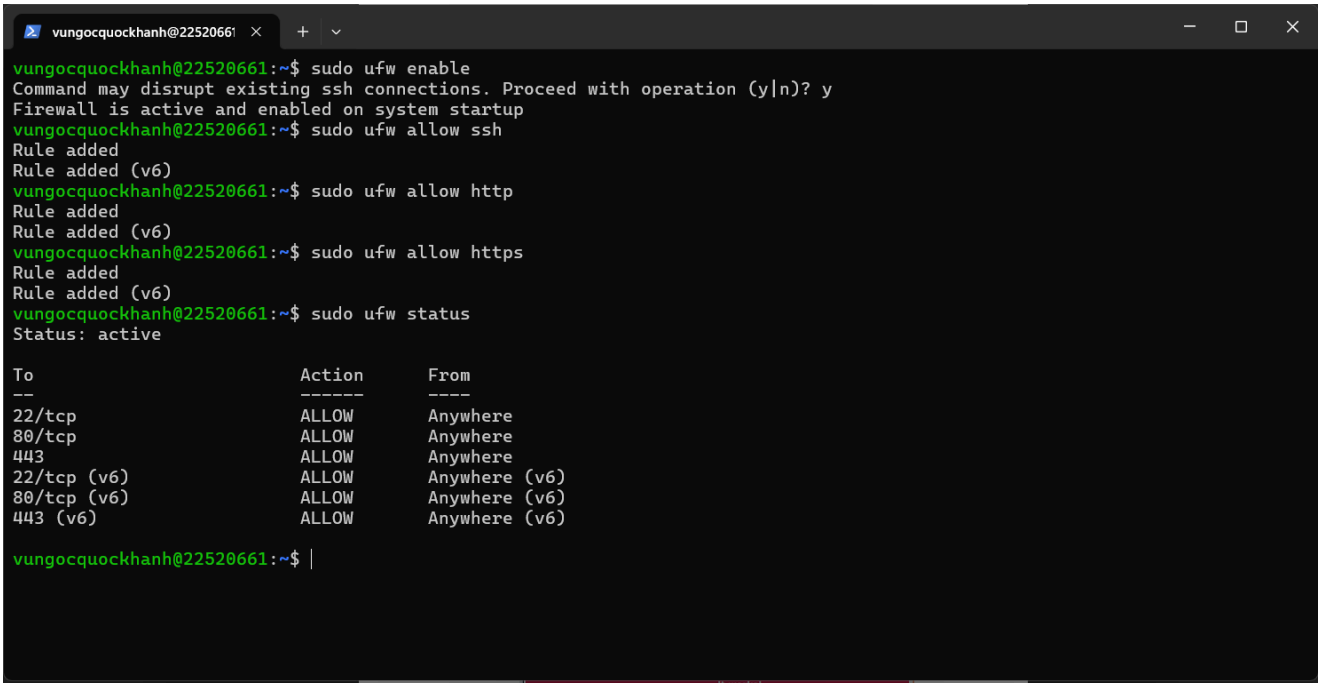
Cài đặt ssh thành công



Cài đặt apache2:



Thiết lập tường lửa



LAMP/LEMP stack

LAMP/LEMP stack là nền tảng để hosting web gồm 4 lớp giải pháp hỗ trợ để phát triển web. Trong LAMP stack có:

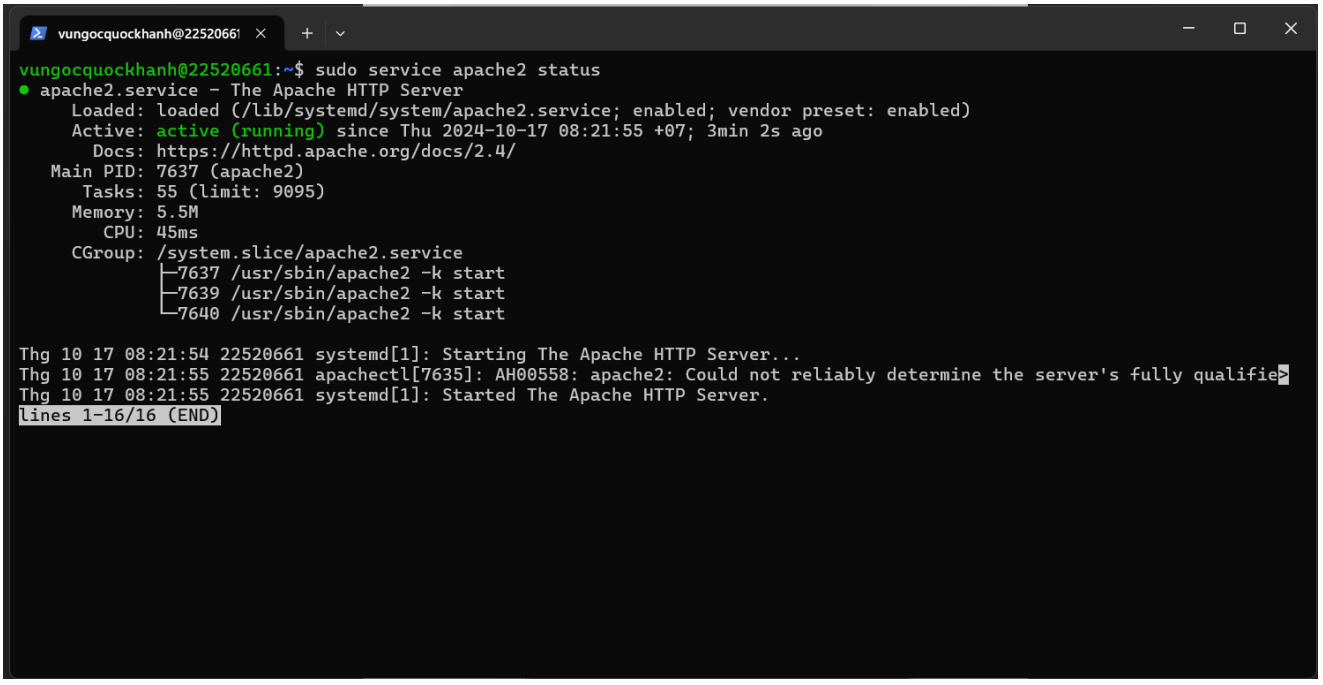
1. Linux: hệ điều hành để host web
2. Apache: Web server
3. MySQL: Hệ quản trị cơ sở dữ liệu
4. PHP: Ngôn ngữ để phát triển web.

LEMP stack tương tự như LAMP stack nhưng thay Apache thành Nginx (chữ A thành chữ E).

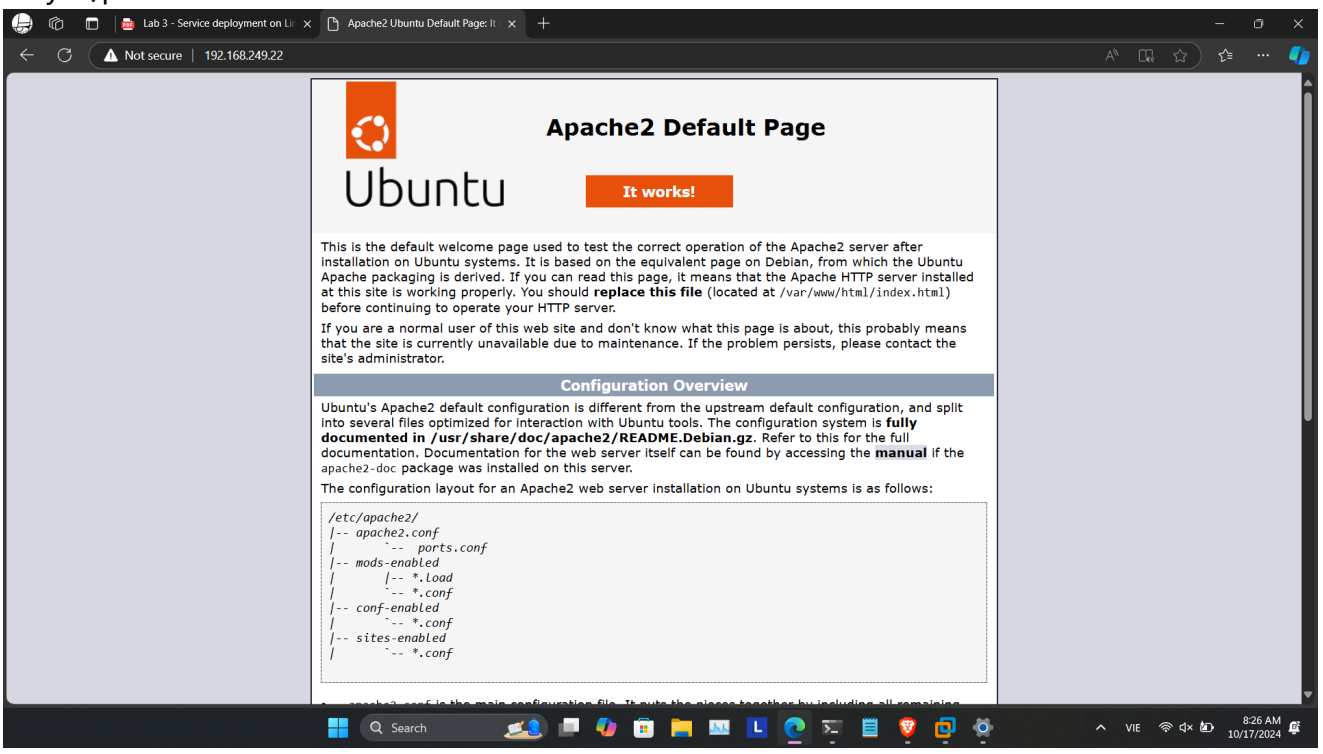
So sánh LAMP stack và LEMP stack

Sự khác nhau nằm ở web server được sử dụng là Apache hay Nginx. Nginx ra đời sau và giải quyết được các vấn đề của Apache, Nginx cũng nhanh hơn. Ngược lại Apache lại có các module để hỗ trợ phát triển web

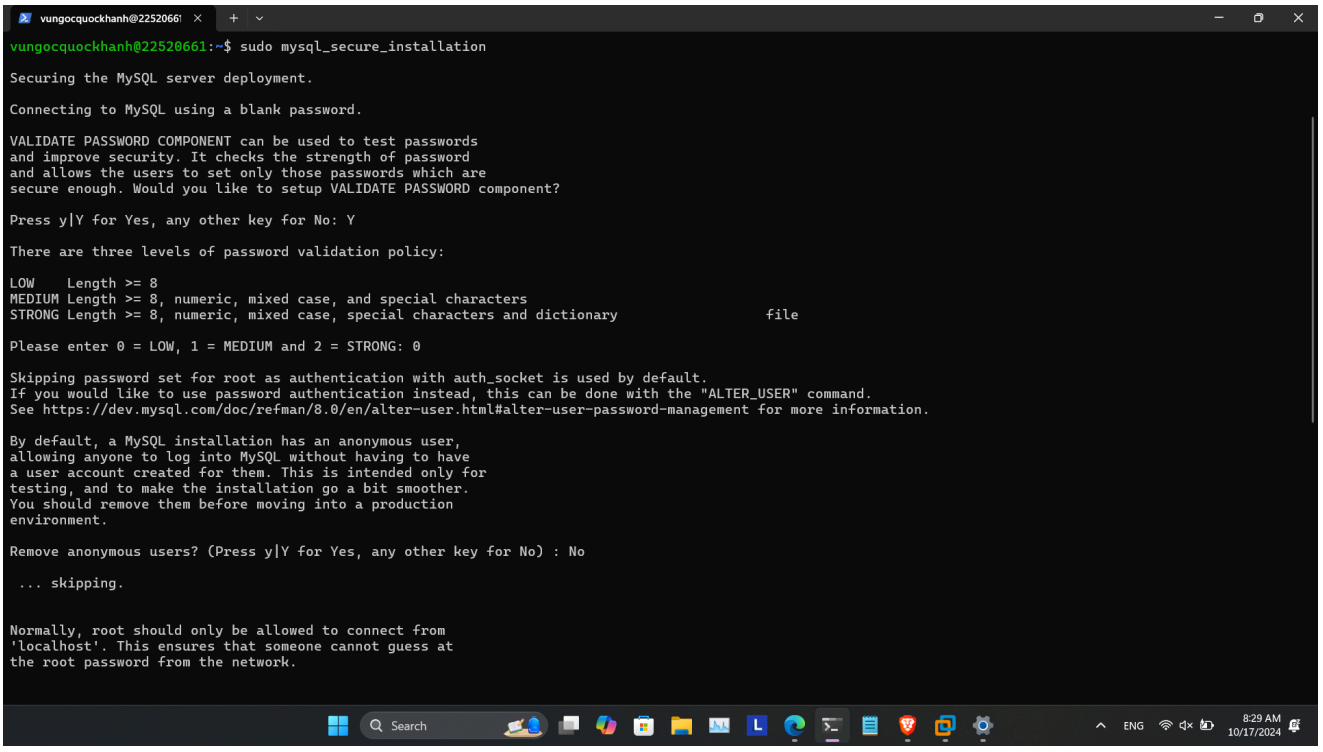
Kiểm tra dịch vụ apache2:



Truy cập vào server:



Sử dụng lệnh sudo mysql_secure_installation để cấu hình cho Mysql nhằm nâng cao tính bảo mật:



Thiết lập mật khẩu khi truy cập MySQL dưới quyền root:

```
vungocquockhanh@22520661:~$ sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.39-0ubuntu0.22.04.1 (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 '123456';
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
mysql>  ALTER USER root@localhost IDENTIFIED WITH mysql_native_password BY '12345678';
Query OK, 0 rows affected (0,01 sec)

mysql>  FLUSH PRIVILEGES;
Query OK, 0 rows affected (0,01 sec)

mysql> exit;
Bye
vungocquockhanh@22520661:~$
```
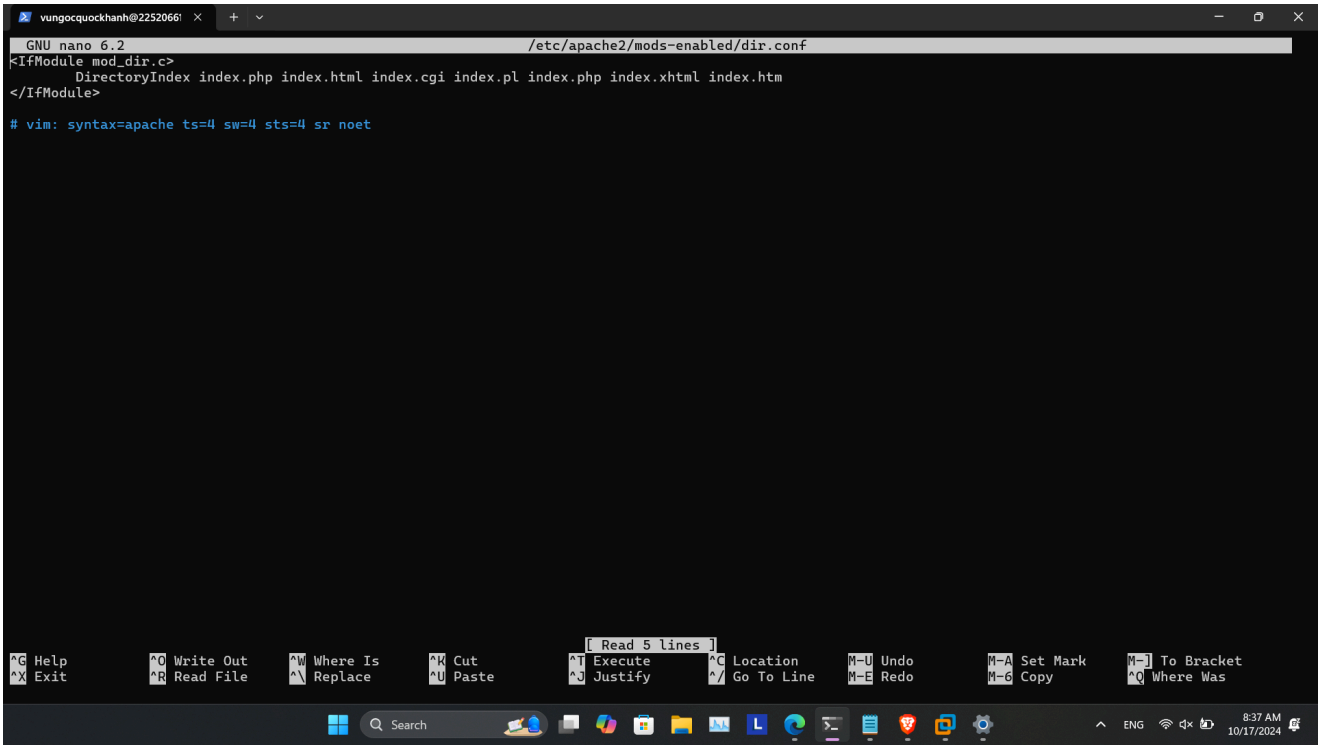

Cài đặt các gói dịch vụ cần thiết với lệnh sudo apt install php libapache2-mod-php php-mysql.

```
vungocquockhanh@22520661:~$ sudo apt install php libapache2-mod-php php-mysql
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libwpe-1.0-1 libwpebackend-fdo-1.0-1
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libapache2-mod-php8.1 php-common php8.1 php8.1-cli php8.1-common php8.1-mysql php8.1-opcache php8.1-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php8.1 php php-common php-mysql php8.1 php8.1-cli php8.1-common php8.1-mysql php8.1-opcache php8.1-readline
0 upgraded, 11 newly installed, 0 to remove and 14 not upgraded.
Need to get 5.264 kB of archives.
After this operation, 21,8 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://vn.archive.ubuntu.com/ubuntu jammy/main amd64 php-common all 2:92ubuntu1 [12,4 kB]
Get:2 http://vn.archive.ubuntu.com/ubuntu jammy-updates/main amd64 php8.1-common amd64 8.1.2-1ubuntu2.19 [1.127 kB]
Get:3 http://vn.archive.ubuntu.com/ubuntu jammy-updates/main amd64 php8.1-opcache amd64 8.1.2-1ubuntu2.19 [365 kB]
Get:4 http://vn.archive.ubuntu.com/ubuntu jammy-updates/main amd64 php8.1-readline amd64 8.1.2-1ubuntu2.19 [13,6 kB]
Get:5 http://vn.archive.ubuntu.com/ubuntu jammy-updates/main amd64 php8.1-cli amd64 8.1.2-1ubuntu2.19 [1.833 kB]
Get:6 http://vn.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libapache2-mod-php8.1 amd64 8.1.2-1ubuntu2.19 [1.765 kB]
Get:7 http://vn.archive.ubuntu.com/ubuntu jammy/main amd64 libapache2-mod-php all 2:8.1+92ubuntu1 [2.898 B]
Get:8 http://vn.archive.ubuntu.com/ubuntu jammy-updates/main amd64 php8.1 all 8.1.2-1ubuntu2.19 [9.156 B]
Get:9 http://vn.archive.ubuntu.com/ubuntu jammy/main amd64 php all 2:8.1+92ubuntu1 [2.756 B]
Get:10 http://vn.archive.ubuntu.com/ubuntu jammy-updates/main amd64 php8.1-mysql amd64 8.1.2-1ubuntu2.19 [130 kB]
Get:11 http://vn.archive.ubuntu.com/ubuntu jammy/main amd64 php-mysql all 2:8.1+92ubuntu1 [1.834 B]
Fetched 5.264 kB in 2s (3.316 kB/s)
Selecting previously unselected package php-common.
(Reading database ... 220688 files and directories currently installed.)
Preparing to unpack .../00-php-common_2%3a92ubuntu1_all.deb ...
Unpacking php-common (2:92ubuntu1) ...
Selecting previously unselected package php8.1-common.
Preparing to unpack .../01-php8.1-common_8.1.2-1ubuntu2.19_amd64.deb ...
Unpacking php8.1-common (8.1.2-1ubuntu2.19) ...
Selecting previously unselected package php8.1-opcache.
Preparing to unpack .../02-php8.1-opcache_8.1.2-1ubuntu2.19_amd64.deb ...
Unpacking php8.1-opcache (8.1.2-1ubuntu2.19) ...
Selecting previously unselected package php8.1-readline.
```

Cấu hình cho Web server có thể ưu tiên load file .PHP:



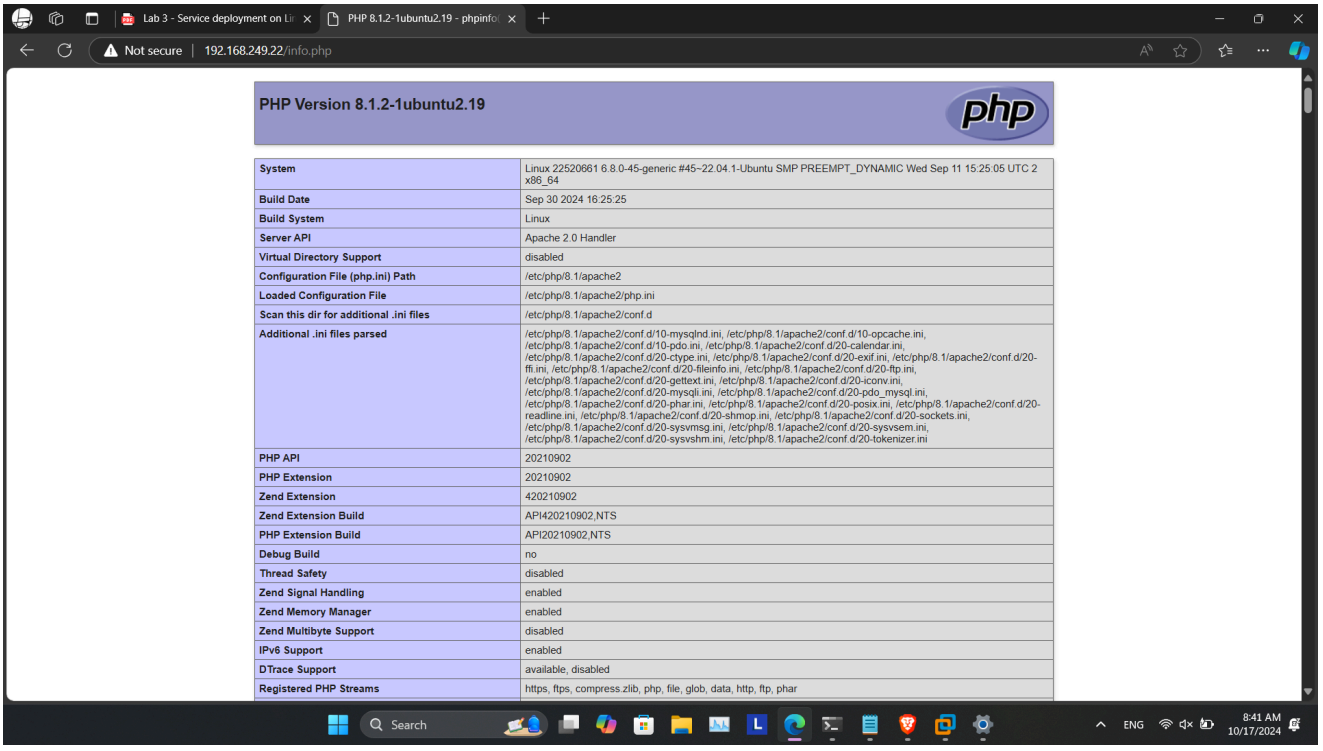
Khởi động lại Apache để áp dụng các thay đổi bằng lệnh sudo systemctl restart apache2.service. Kiểm tra trạng thái hoạt động của Apache bằng lệnh sudo systemctl status apache2.service.

```
vungocquockhanh@22520661:~$ sudo systemctl restart apache2.service
vungocquockhanh@22520661:~$ sudo systemctl status apache2.service
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Thu 2024-10-17 08:38:34 +07; 11s ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 16350 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 16356 (apache2)
      Tasks: 6 (limit: 9095)
     Memory: 10.5M
        CPU: 70ms
     CGroup: /system.slice/apache2.service
             ├─16356 /usr/sbin/apache2 -k start
             ├─16357 /usr/sbin/apache2 -k start
             ├─16358 /usr/sbin/apache2 -k start
             ├─16359 /usr/sbin/apache2 -k start
             ├─16360 /usr/sbin/apache2 -k start
             └─16361 /usr/sbin/apache2 -k start

Thg 10 17 08:38:34 22520661 systemd[1]: Starting The Apache HTTP Server...
Thg 10 17 08:38:34 22520661 apachectl[16355]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 1.87.163.85. S
Thg 10 17 08:38:34 22520661 systemd[1]: Started The Apache HTTP Server.
lines 1-20/20 (END)
```

Kiểm tra hoạt động của PHP trên server bằng cách tạo 1 file .php bất kỳ và kiểm tra truy cập:

```
 GNU nano 6.2                                  /var/www/html/info.php
<?php
        phpinfo();
?>
```

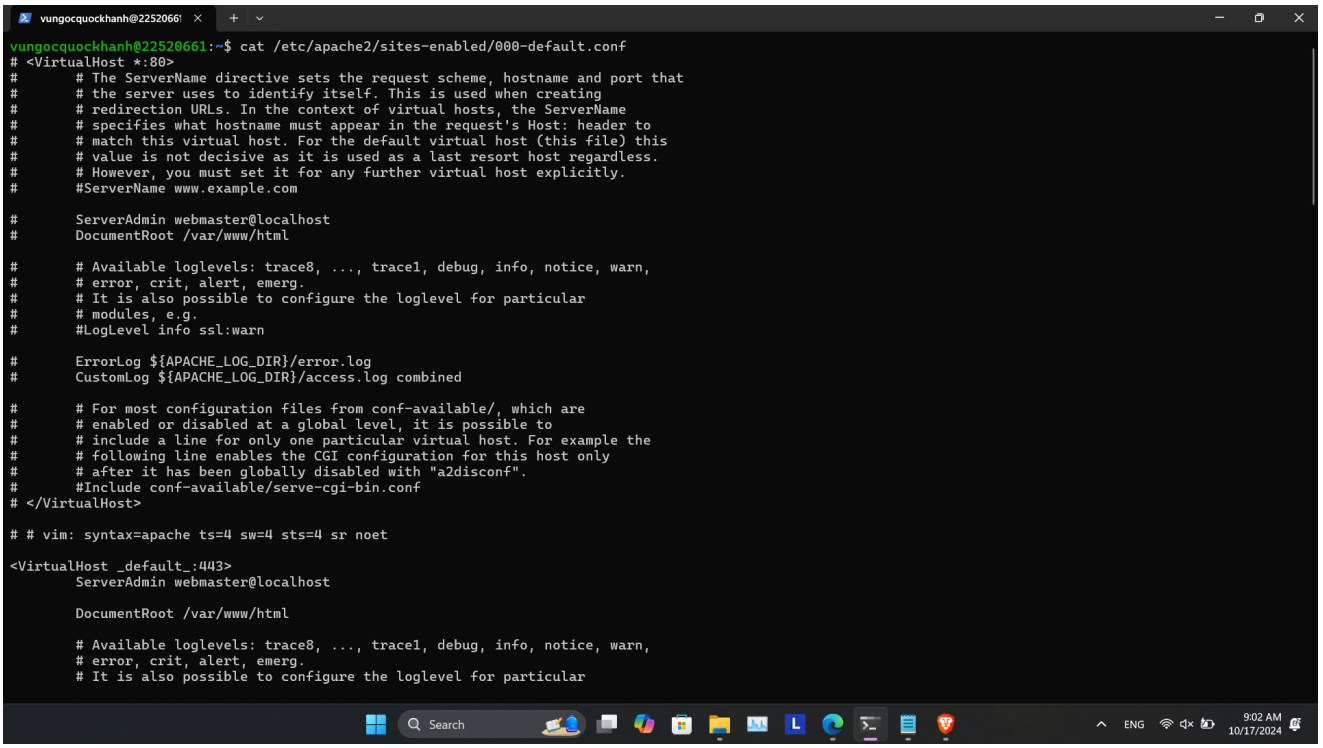
Truy cập vào server để kiểm tra file info.php:



Cấu hình domain cho dịch vụ Web:

```
 GNU nano 6.2                                    /etc/hosts
127.0.0.1       localhost
127.0.1.1       thinkpad
192.168.249.22 nhom13.local
# 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
```

Cấu hình HTTPS:


vungocquockhanh@22520661:~$ cat /etc/apache2/sites-enabled/000-default.conf
<VirtualHost *:80>
The ServerName directive sets the request scheme, hostname and port that
the server uses to identify itself. This is used when creating
redirection URLs. In the context of virtual hosts, the ServerName
specifies what hostname must appear in the request's Host: header to
match this virtual host. For the default virtual host (this file) this
value is not decisive as it is used as a last resort host regardless.
However, you must set it for any further virtual host explicitly.
#ServerName www.example.com
ServerAdmin webmaster@localhost
DocumentRoot /var/www/html
Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
error, crit, alert, emerg.
It is also possible to configure the loglevel for particular
modules, e.g.
#LogLevel info ssl:warn
ErrorLog ${APACHE_LOG_DIR}/error.log
CustomLog ${APACHE_LOG_DIR}/access.log combined
For most configuration files from conf-available/, which are
enabled or disabled at a global level, it is possible to
include a line for only one particular virtual host. For example the
following line enables the CGI configuration for this host only
after it has been globally disabled with "a2disconf".
#Include conf-available/serve-cgi-bin.conf
</VirtualHost>
vim: syntax=apache ts=4 sw=4 sts=4 sr noet
<VirtualHost _default_:443>
        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html
        # Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
        # error, crit, alert, emerg.
        # It is also possible to configure the loglevel for particular
Search
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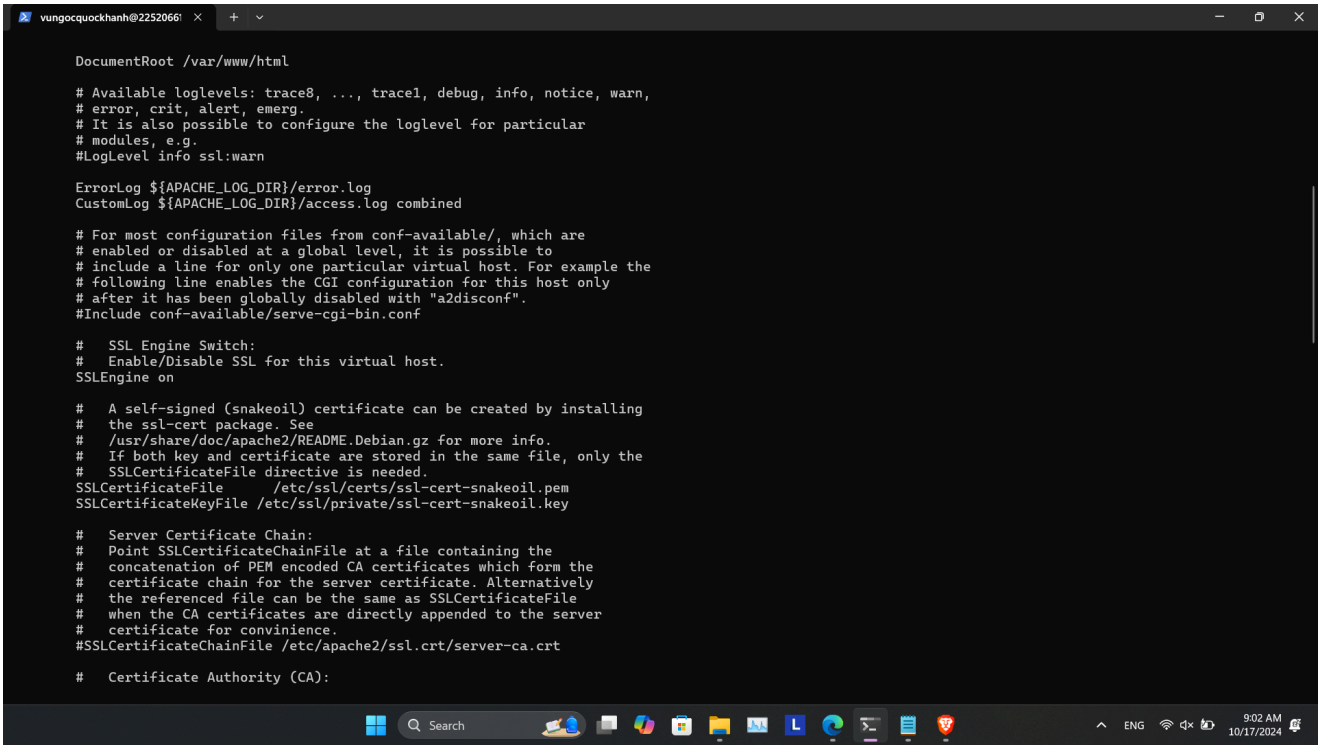
vungocquockhanh@22520661
        DocumentRoot /var/www/html
        # Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
        # error, crit, alert, emerg.
        # It is also possible to configure the loglevel for particular
        # modules, e.g.
        #LogLevel info ssl:warn
        ErrorLog ${APACHE_LOG_DIR}/error.log
        CustomLog ${APACHE_LOG_DIR}/access.log combined
        # For most configuration files from conf-available/, which are
        # enabled or disabled at a global level, it is possible to
        # include a line for only one particular virtual host. For example the
        # following line enables the CGI configuration for this host only
        # after it has been globally disabled with "a2disconf".
        #Include conf-available/serve-cgi-bin.conf
        #   SSL Engine Switch:
        #   Enable/Disable SSL for this virtual host.
        SSLEngine on
        #   A self-signed (snakeoil) certificate can be created by installing
        #   the ssl-cert package. See
        #   /usr/share/doc/apache2/README.Debian.gz for more info.
        #   If both key and certificate are stored in the same file, only the
        #   SSLCertificateFile directive is needed.
        SSLCertificateFile   /etc/ssl/certs/ssl-cert-snakeoil.pem
        SSLCertificateKeyFile /etc/ssl/private/ssl-cert-snakeoil.key
        #   Server Certificate Chain:
        #   Point SSLCertificateChainFile at a file containing the
        #   concatenation of PEM encoded CA certificates which form the
        #   certificate chain for the server certificate. Alternatively
        #   the referenced file can be the same as SSLCertificateFile
        #   when the CA certificates are directly appended to the server
        #   certificate for convinience.
        #SSLCertificateChainFile /etc/apache2/ssl.crt/server-ca.crt
        #   Certificate Authority (CA):
Search
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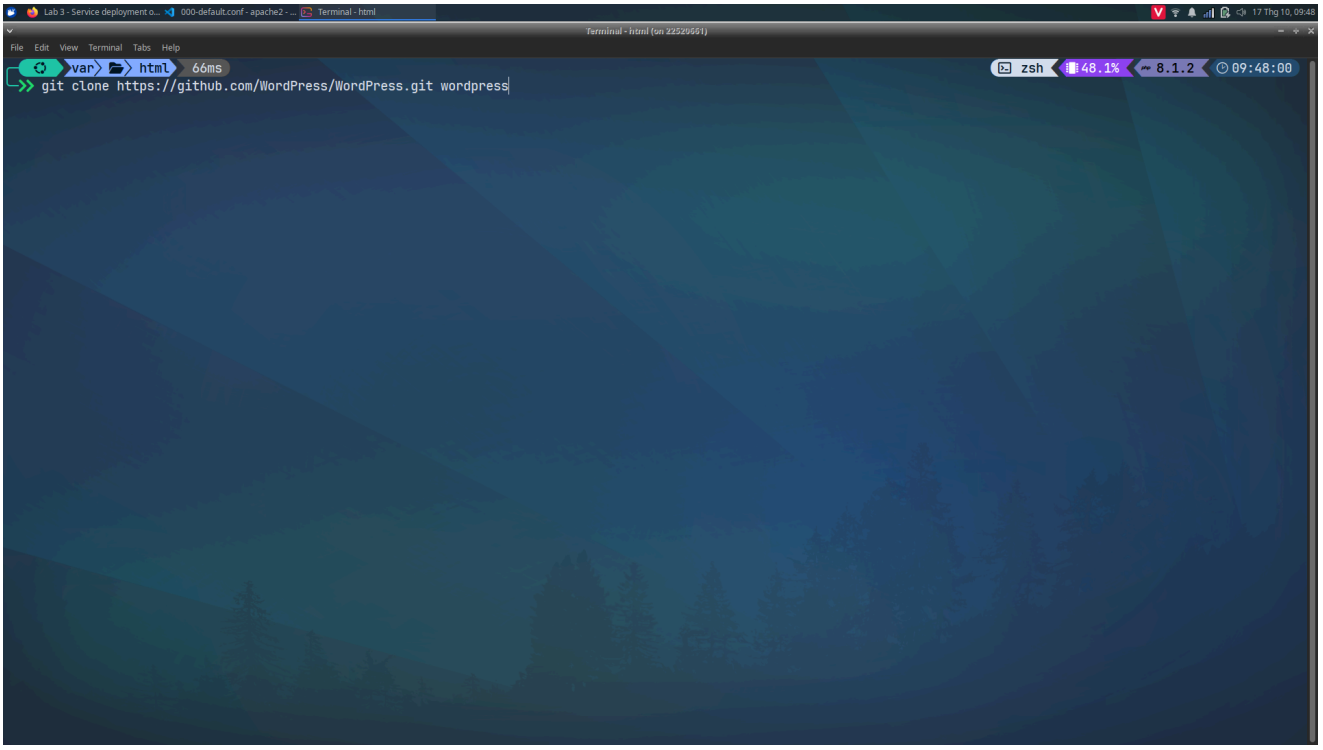
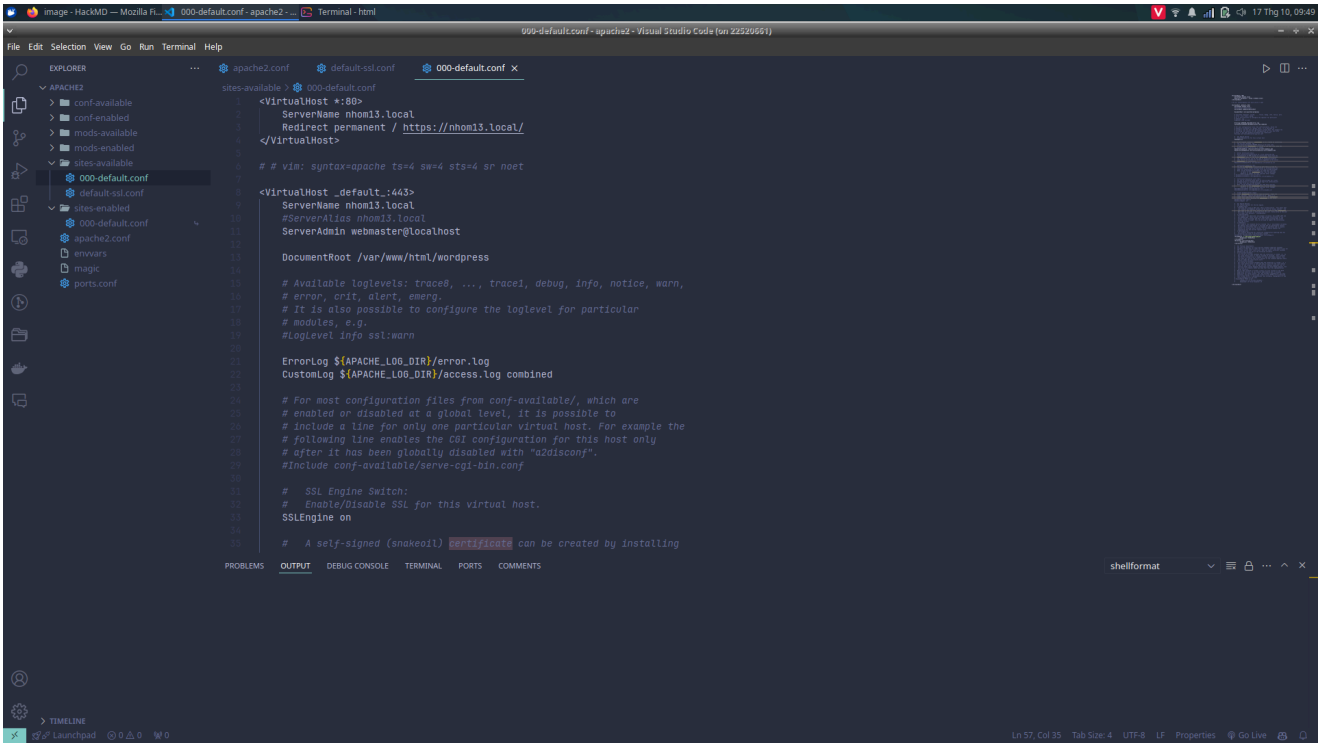
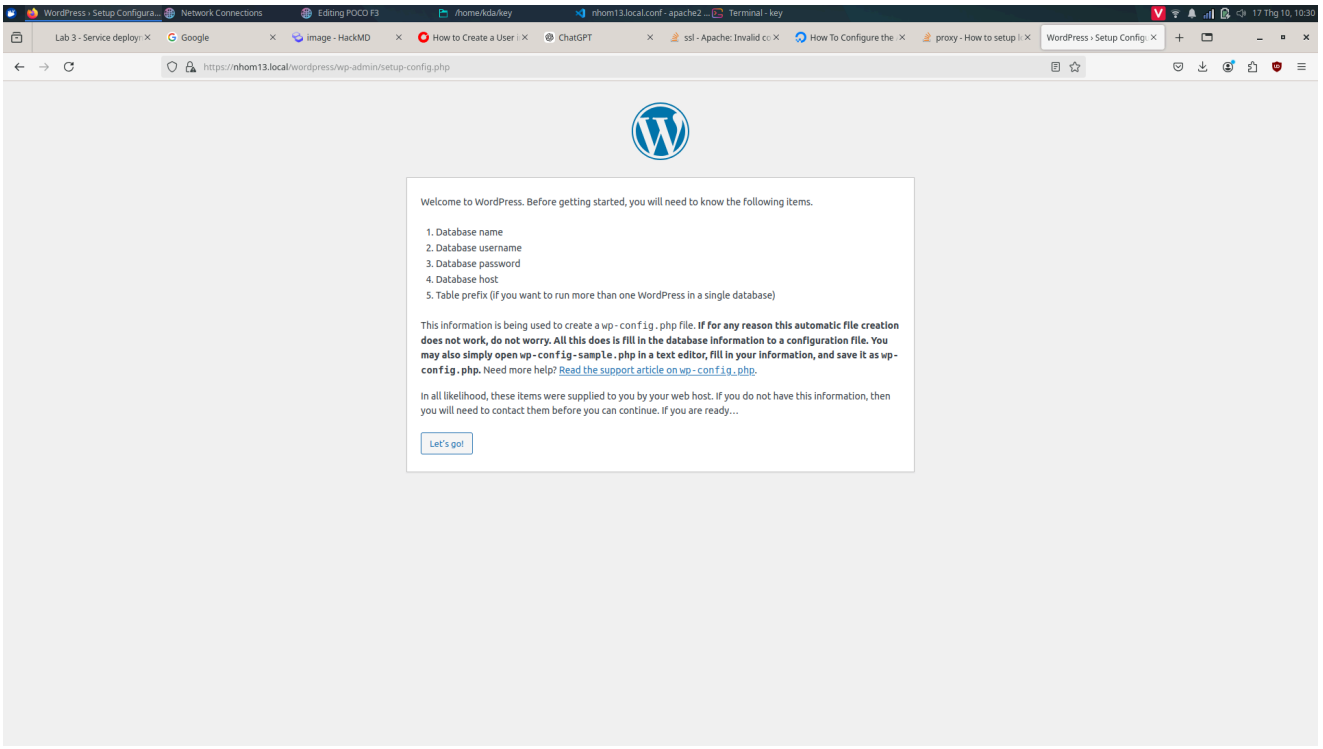
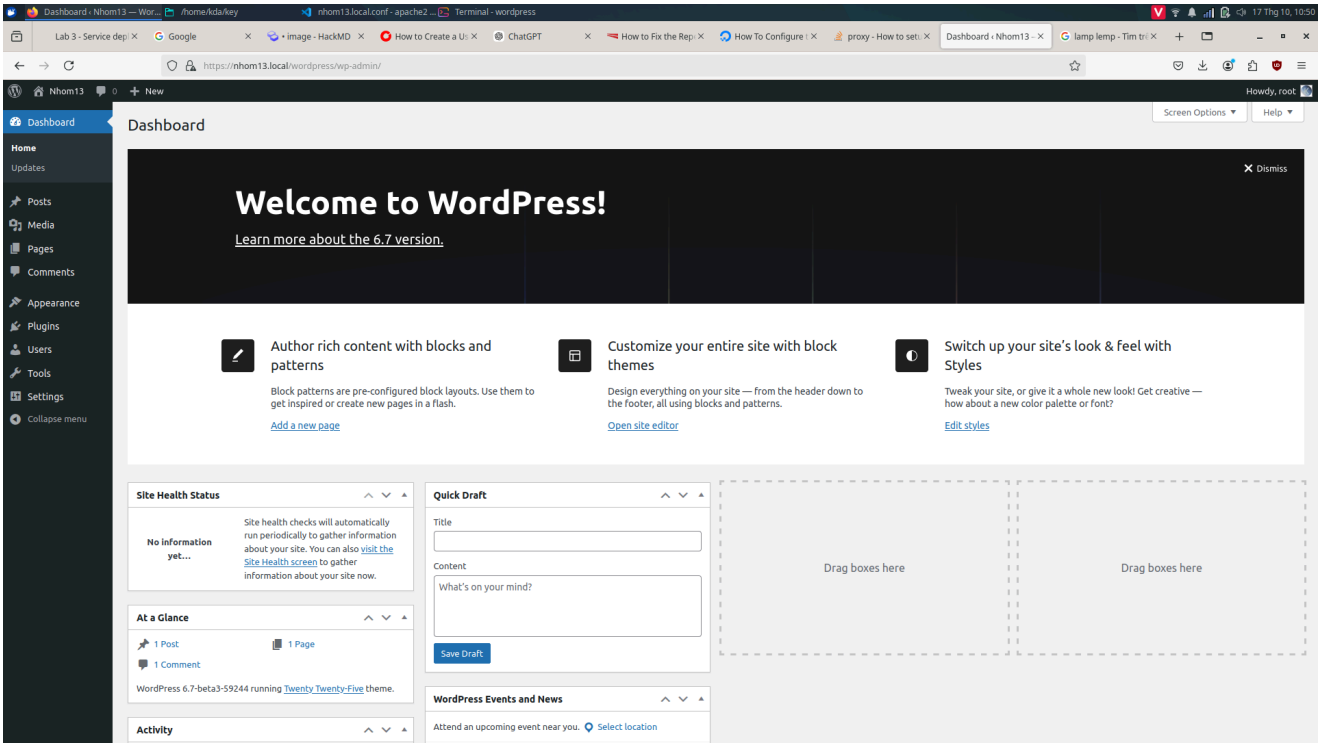
Tải mã nguồn wordpress

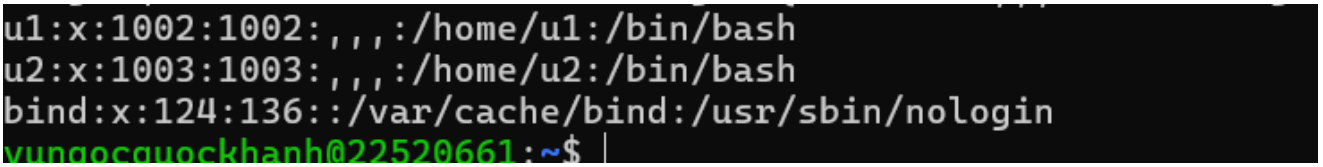








Tạo user u1 và u2:

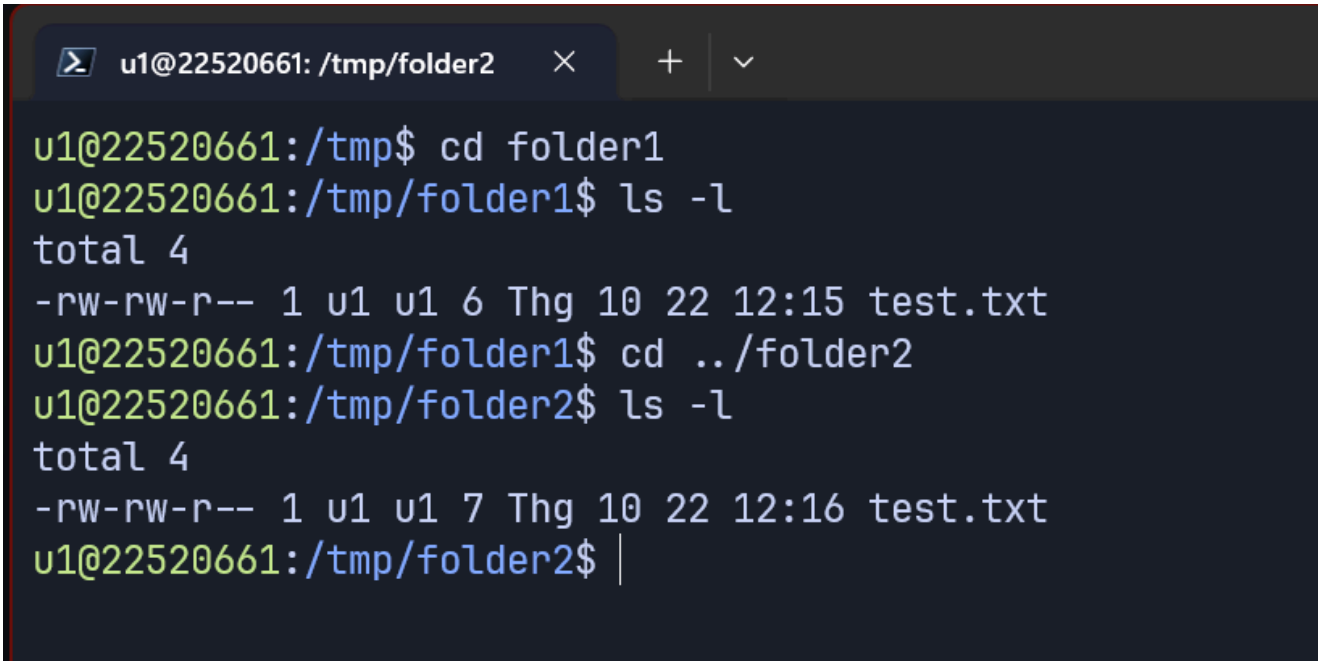


Tạo thư mục folder1, phân quyền đọc ghi cho u1, chặn mọi quyền của nhóm và user khác trên folder1. Sử dụng lệnh ls -l để kiểm tra:

Tạo thư mục folder2, phân quyền đọc ghi cho u2 và nhóm u2, chặn mọi quyền từ user khác trên folder2. Sử dụng lệnh ls -l để kiểm tra:

```
vungocquockhanh@22520661:/tmp$ ls -l
total 3676
-rw------- 1 kda  kda       0 Thg 10 17 07:41 config-err-pV9fg7
drwx------ 2 u1   u1     4096 Thg 10 17 10:19 folder1
drwxrwx--- 2 u2   u2     4096 Thg 10 17 10:20 folder2
```

Đăng nhập vào user u1 bằng lệnh su u1. Truy cập và tạo file trong folder1 và folder2 để xem kết quả:



Netspeed

```bash
#!/bin/bash

# Kiểm tra xem người dùng đã cung cấp interface chưa
if [ -z "$1" ]; then
  echo "Vui lòng cung cấp tên interface. Ví dụ: ./net_speed.sh eth0"
  exit 1
fi

# Interface cần theo dõi
INTERFACE=$1

# Hàm lấy số byte gửi và nhận
get_bytes() {
  cat /sys/class/net/$INTERFACE/statistics/tx_bytes  # Số byte gửi
  cat /sys/class/net/$INTERFACE/statistics/rx_bytes  # Số byte nhận
}
while true; do
# Lấy số byte ban đầu
TX1=$(get_bytes | head -n 1)
RX1=$(get_bytes | tail -n 1)

# Thời gian chờ (2 giây)
sleep 2
```

```
# Lấy số byte sau khi đợi
TX2=$(get_bytes | head -n 1)
RX2=$(get_bytes | tail -n 1)

# Tính tốc độ (số byte đã chuyển trong 2 giây)
TX_RATE=$(expr $((TX2 - TX1)) / 2)  # Tốc độ gửi (byte/giây)
RX_RATE=$(expr $((RX2 - RX1)) / 2)  # Tốc độ nhận (byte/giây)

# Hiển thị kết quả
echo "Tốc độ gửi: $TX_RATE B/s"
echo "Tốc độ nhận: $RX_RATE B/s"
done
```