

# Deploying Web Services in a Cloud Environment



Submitted for the course:

*NETV 379 - Cloud Computing*

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## 1. Introduction

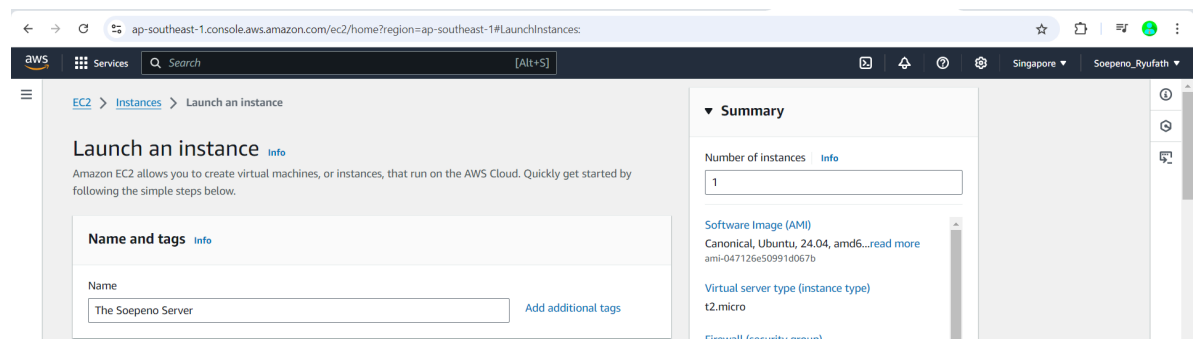
Cloud computing is a technology that provides on-demand access to computing resources over the internet, allowing users to scale their infrastructure and applications without having to manage physical servers. It offers flexibility, cost efficiency, and reliability, making it a key solution for businesses and developers alike. Among the various cloud platforms, Amazon Web Services (AWS) stands out as one of the most preferred providers due to its vast range of services, global infrastructure, security features, and scalability. AWS also provides pay-as-you-go pricing, making it an affordable option for projects of any size.

In this lab case study, I will deploy and create a fully functioning WordPress website using an AWS EC2 instance, an SQL server using the instance, and demonstrate the step-by-step process. The process involves setting up an instance, configuring the necessary environment, and installing WordPress through the instance to serve as the website's content management system. This exercise highlights the simplicity and power of cloud platforms like AWS, where creating scalable web applications becomes more efficient and accessible.

## 2. Procedure

### Part 1: Instances

1. First we need to create an instance.



2. We will run the instance with Ubuntu 24.04 LTS as the server

Search our full catalog including 1000s of application and OS images

**Quick Start**

Amazon Linux  
aws

macOS  
Mac

Ubuntu  
ubuntu

Windows  
Microsoft

Red Hat  
Red Hat

SUSE Li  
SUSE

[Browse more AMIs](#)  
 Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type  
 ami-0497a974f8d5dcef8 (64-bit (x86)) / ami-047b32292da23477b (64-bit (Arm))  
 Virtualization: hvm    ENA enabled: true    Root device type: ebs

Free tier eligible

**Description**

Ubuntu Server 22.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Architecture  
 64-bit (x86)

AMI ID  
 ami-0497a974f8d5dcef8

Username  
 ubuntu

Verified provider

A key pair is needed, we will name it “alief soepeno” and add the other necessary details

Select an existing key pair or create a key pair

We noticed that you didn't select a key pair. If you want to be able to connect to your instance it is recommended that you create one or select an existing one.

☒ Create new key pair
 ☐ Proceed without key pair

**Key pair name**  
Key pairs allow you to connect to your instance securely.

Alief Soepeno

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

**Key pair type**

☒ RSA  
RSA encrypted private and public key pair
 ☐ ED25519  
ED25519 encrypted private and public key pair

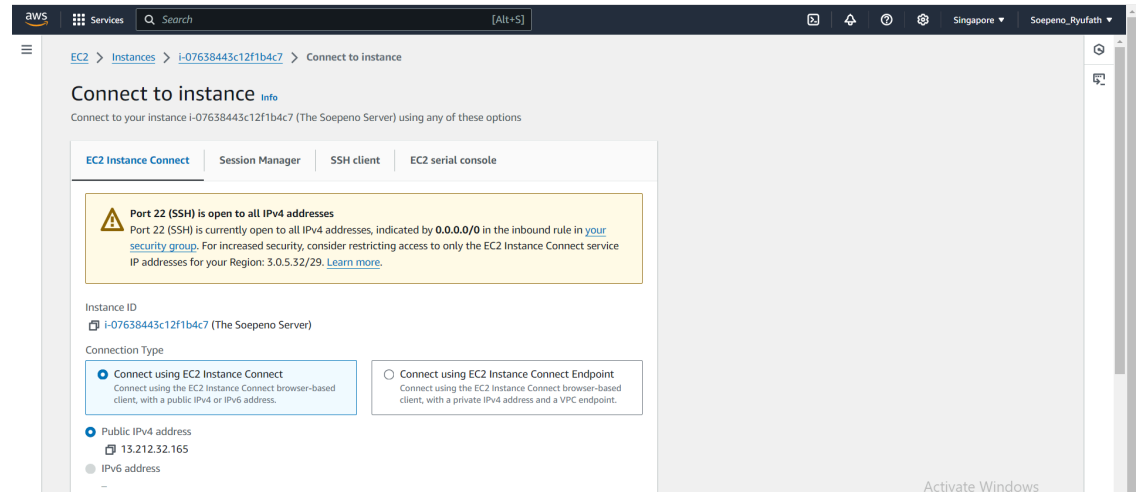
**Private key file format**

☒ .pem  
For use with OpenSSH
 ☐ .ppk

Cancel **Launch instance**

3. Then we connect and run the instance.

First, we select the instance we want to connect and run



We will be connected to the linux terminal for the instance. Before we move further, we must first update and see if the linux version is relevant

```
ubuntu@ip-172-31-18-247:~$ sudo apt update
Hit:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:3 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:4 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:5 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]
Get:6 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]
Get:7 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]
Get:8 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]
Get:9 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]
Get:10 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [2066 kB]
Get:11 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [357 kB]
Get:12 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [17.8 kB]
Get:13 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [2504 kB]
Get:14 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [432 kB]
Get:15 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 c-n-f Metadata [616 B]
Get:16 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1128 kB]
Get:17 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [263 kB]
Get:18 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [26.3 kB]
Get:19 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 Packages [43.3 kB]
Get:20 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse Translation-en [10.8 kB]
Get:21 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 c-n-f Metadata [444 B]
Get:22 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 Packages [91.6 kB]
Get:23 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main Translation-en [11.1 kB]
Get:24 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 c-n-f Metadata [388 B]
```

```

98% [34 Packages store 0 B] [41 Translation-en 6709 B/7300 B 88%]
Get:42 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [228 B]
98% [34 Packages store 0 B]
98% [Working]
98% [35 Translation-en store 0 B]
98% [Working]
98% [36 Commands-amd64 store 0 B]
99% [Working]
99% [37 Packages store 0 B]
99% [Working]
99% [38 Translation-en store 0 B]
99% [Working]
99% [39 Commands-amd64 store 0 B]
99% [Working]
99% [40 Packages store 0 B]
100% [Working]
100% [41 Translation-en store 0 B]
100% [Working]
100% [42 Commands-amd64 store 0 B]
100% [Working]

Fetched 33.9 MB in 9s (3945 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
74 packages can be upgraded. Run 'apt list --upgradable' to see them.

```

#### 4. Then we install apache2

```

aws Services Search [Alt+S]
99% [39 Commands-amd64 store 0 B]
99% [Working]
99% [40 Packages store 0 B]
100% [Working]
100% [41 Translation-en store 0 B]
100% [Working]
100% [42 Commands-amd64 store 0 B]
100% [Working]

Fetched 33.9 MB in 9s (3945 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
74 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-172-31-18-247:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap mime-support ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser bzip2-doc
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap mime-support ssl-cert
0 upgraded, 13 newly installed, 0 to remove and 74 not upgraded.
Need to get 2141 kB of archives.
After this operation, 8524 kB of additional disk space will be used.
Do you want to continue? (Y/n) y

```

Then we update the following with the apache rules:

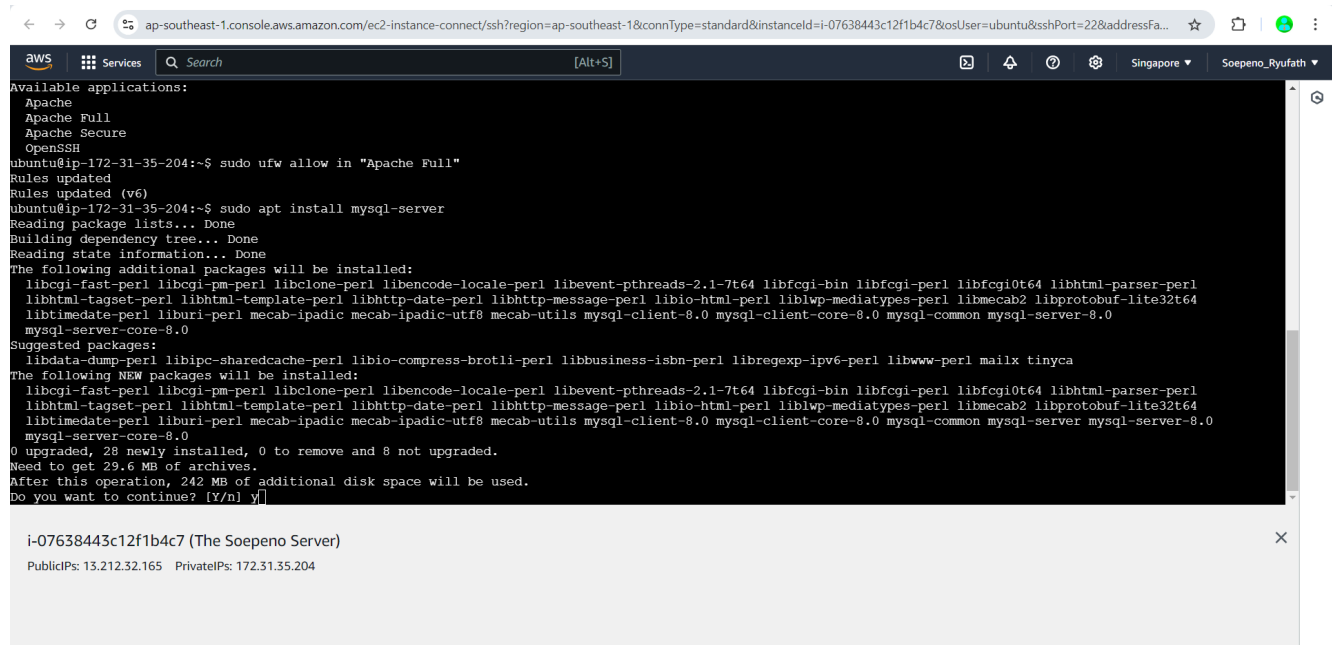
```

ubuntu@ip-172-31-35-204:~$ sudo ufw app list
Available applications:
  Apache
  Apache Full
  Apache Secure
  OpenSSH
ubuntu@ip-172-31-35-204:~$ sudo ufw allow in "Apache Full"
Rules updated
Rules updated (v6)

```

## Part 2: Deploy SQL

### 1. First we need to install mysql server with the instance



```

aws
Services Search [Alt+S]
Singapore Soepeno_Ryufath

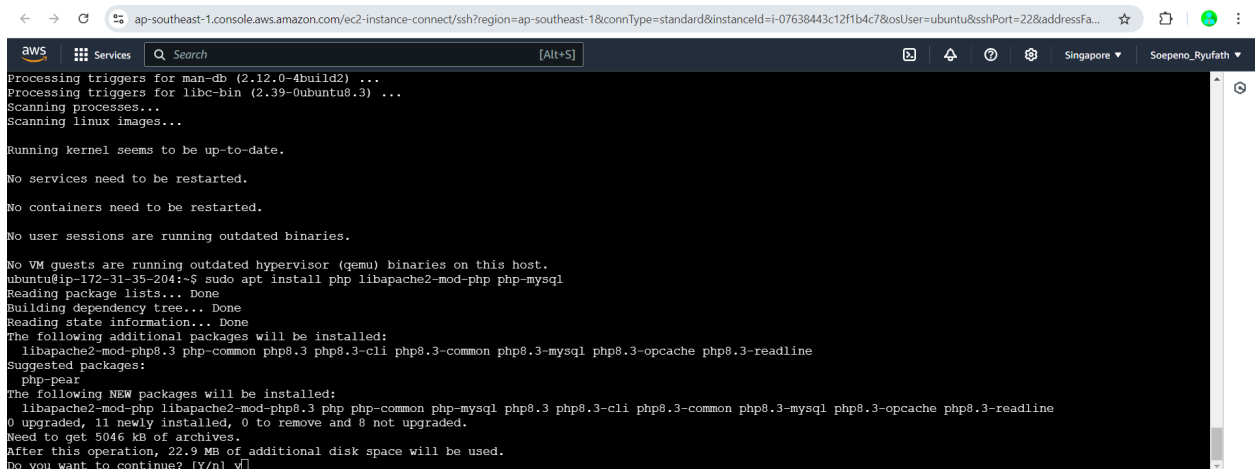
Available applications:
Apache
Apache Full
Apache Secure
OpenSSH

ubuntu@ip-172-31-35-204:~$ sudo ufw allow in "Apache Full"
Rules updated
Rules updated (v6)
ubuntu@ip-172-31-35-204:~$ sudo apt install mysql-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libbcgi-fast-perl libbcgi-pm-perl libclone-perl libencode-locale-perl libevent-pthreads-2.1-7t64 libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2 libprotobuf-lite32t64
  libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server-8.0
  mysql-server-core-8.0
Suggested packages:
  libdata-dump-perl libipc-sharedcache-perl libio-compress-brotli-perl libbusiness-isbn-perl libregexp-ipv6-perl libwww-perl mailx tinycal
The following NEW packages will be installed:
  libbcgi-fast-perl libbcgi-pm-perl libclone-perl libencode-locale-perl libevent-pthreads-2.1-7t64 libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2 libprotobuf-lite32t64
  libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server mysql-server-8.0
  mysql-server-core-8.0
0 upgraded, 28 newly installed, 0 to remove and 8 not upgraded.
Need to get 29.6 MB of archives.
After this operation, 242 MB of additional disk space will be used.
Do you want to continue? [Y/n] y

i-07638443c12f1b4c7 (The Soepeno Server)
PublicIPs: 13.212.32.165 PrivateIPs: 172.31.35.204

```

### 2. Then we install the php host with an apache2 library



```

aws
Services Search [Alt+S]
Singapore Soepeno_Ryufath

Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.3) ...
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.
ubuntu@ip-172-31-35-204:~$ sudo apt install php libapache2-mod-php php-mysql
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libapache2-mod-php8.3 php-common php8.3 php8.3-cli php8.3-common php8.3-mysql php8.3-opcache php8.3-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php8.3 php php-common php-mysql php8.3 php8.3-cli php8.3-common php8.3-mysql php8.3-opcache php8.3-readline
0 upgraded, 11 newly installed, 0 to remove and 8 not upgraded.
Need to get 5046 KB of archives.
After this operation, 22.9 MB of additional disk space will be used.
Do you want to continue? [Y/n] y

```

### 3. Then let's run a mysql server to begin implementing our databases

```

aws
Services Search [Alt+S]
Singapore Soepeno_Ryufath

apache2_switch mpm Switch to prefork
apache2_invoke: Enable module php8.3
Setting up php8.3 (8.3.6-0ubuntu0.24.04.2) ...
Setting up libapache2-mod-php8.3 (2:8.3+93ubuntu2) ...
Setting up php (2:8.3+93ubuntu2) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for php8.3-cli (8.3.6-0ubuntu0.24.04.2) ...
Processing triggers for libapache2-mod-php8.3 (8.3.6-0ubuntu0.24.04.2) ...
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.
ubuntu@ip-172-31-35-204:~$ 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: 8.0.39-0ubuntu0.24.04.2 (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>

```

- Let's create a database named "wordpress" with all the permissions and privileges required

```

aws
Services Search [Alt+S]
Singapore Soepeno_Ryufath

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.
ubuntu@ip-172-31-35-204:~$ 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: 8.0.39-0ubuntu0.24.04.2 (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 wordpress;
Query OK, 1 row affected (0.02 sec)

mysql> CREATE USER 'wordpressuser'@'localhost' IDENTIFIED BY 'wordpress'
-> ;
Query OK, 0 rows affected (0.02 sec)

mysql> GRANT ALL ON wordpress.* TO 'wordpressuser'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> EXIT;
Bye
ubuntu@ip-172-31-35-204:~$

```

```

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

```

- Update the instance again

```

aws  Services  Search [Alt+S]  Singapore  Soepeno_Ryufath
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.0.39-0ubuntu0.24.04.2 (Ubuntu)

Copyright (c) 2000, 2024, Oracle and/or its affiliates.

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> FLUSH PRIVILEGES;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'PRIVILE
GES' at line 1
mysql> USE DATABASE wordpress;
ERROR 1049 (42000): Unknown database 'DATABASE'
mysql> USE wordpress
Database changed
mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

mysql> EXIT
Bye
ubuntu@ip-172-31-35-204:~$ sudo apt update
Hit:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Hit:3 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Fetched 126 kB in 0s (304 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
8 packages can be upgraded. Run 'apt list --upgradable' to see them.

```

## 6. Install the php extensions

```

ubuntu@ip-172-31-35-204:~$ sudo apt install php-curl php-gd php-mbstring php-xml php-xmldr php-soap php-intl php-zip
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  fontconfig-config fonts-dejavu-core fonts-dejavu-mono libaom3 libde265-0 libdeflate0 libfontconfig1 libgd3 libheif-plugin-aomdec libheif-plugin-aomenc
  libheif-plugin-libde265 libheif1 libjbig0 libjpeg-turbo8 libjpeg8 liblerc4 libsharpyuv0 libtiff6 libwebp7 libxmlrpc-epi0t64 libxpm4 libzip4t64 php8.3-curl
  php8.3-gd php8.3-intl php8.3-mbstring php8.3-soap php8.3-xml php8.3-xmldr php8.3-zip
Suggested packages:
  libgd-tools libheif-plugin-x265 libheif-plugin-ffmpegdec libheif-plugin-jpegdec libheif-plugin-jpegenc libheif-plugin-j2kdec libheif-plugin-j2kenc
  libheif-plugin-rav1e libheif-plugin-svtenc
The following NEW packages will be installed:
  fontconfig-config fonts-dejavu-core fonts-dejavu-mono libaom3 libde265-0 libdeflate0 libfontconfig1 libgd3 libheif-plugin-aomdec libheif-plugin-aomenc
  libheif-plugin-libde265 libheif1 libjbig0 libjpeg-turbo8 libjpeg8 liblerc4 libsharpyuv0 libtiff6 libwebp7 libxmlrpc-epi0t64 libxpm4 libzip4t64 php-curl php-gd
  php-intl php-mbstring php-soap php-xml php-xmldr php-zip php8.3-curl php8.3-gd php8.3-intl php8.3-mbstring php8.3-soap php8.3-xml php8.3-xmldr php8.3-zip
0 upgraded, 38 newly installed, 0 to remove and 8 not upgraded.
Need to get 6089 kB of archives.
After this operation, 17.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] y

```

## Part 3: Launch Wordpress Website

1. First, we need to run the GPU terminal in linux

```
Setting up php8.1-gd (8.1.2-1ubuntu2.5) ...
Creating config file /etc/php/8.1/mods-available/gd.ini with new version
Setting up php-gd (2:8.1+92ubuntu1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libapache2-mod-php8.1 (8.1.2-1ubuntu2.5) ...
Processing triggers for php8.1-cli (8.1.2-1ubuntu2.5) ...
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.
ubuntu@ip-172-31-13-222:~$ sudo systemctl restart apache2
ubuntu@ip-172-31-13-222:~$ sudo nano /etc/apache2/sites-available/000-default.conf
```



We will see a GPU like this

The screenshot shows an AWS CloudShell terminal window. The browser address bar indicates the connection is to an EC2 instance in the ap-southeast-1 region. The terminal title is 'GNU nano 7.2 /etc/apache2/sites-available/000-default.conf'. The content of the file is as follows:

```
<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
```

The bottom of the terminal shows a row of keyboard shortcuts for nano editor commands like Help, Exit, Write Out, Read File, etc.

2. Change the document root into our wordpress deployment. To navigate to DocumentRoots, we need to use our page keys on our computers

This screenshot is similar to the first one, but the configuration file has been modified. The terminal title remains 'GNU nano 7.2 /etc/apache2/sites-available/000-default.conf'. The content of the file is:

```
<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/wordpress

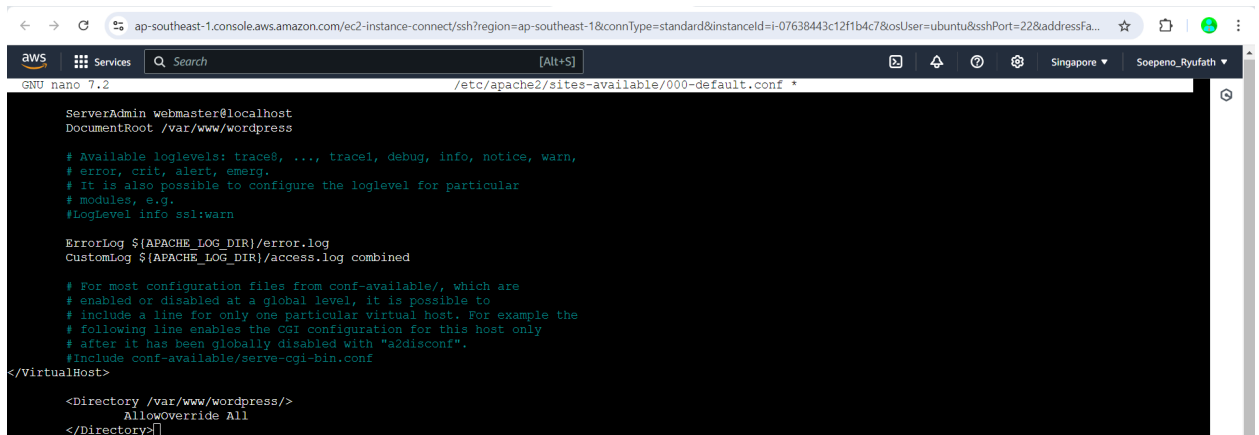
# Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
# error, crit, alert, emerg.
# It is also possible to configure the loglevel for particular
# modules, e.g.
#LogLevel info ssl:warn

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
```

The DocumentRoot has been changed from /var/www/html to /var/www/wordpress. The rest of the file content and the bottom keyboard shortcuts remain the same.

- Below `</VirtualHost>`, add a `<directory>` tag to override the instance and read the file



```

ServerAdmin webmaster@localhost
DocumentRoot /var/www/wordpress

# 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

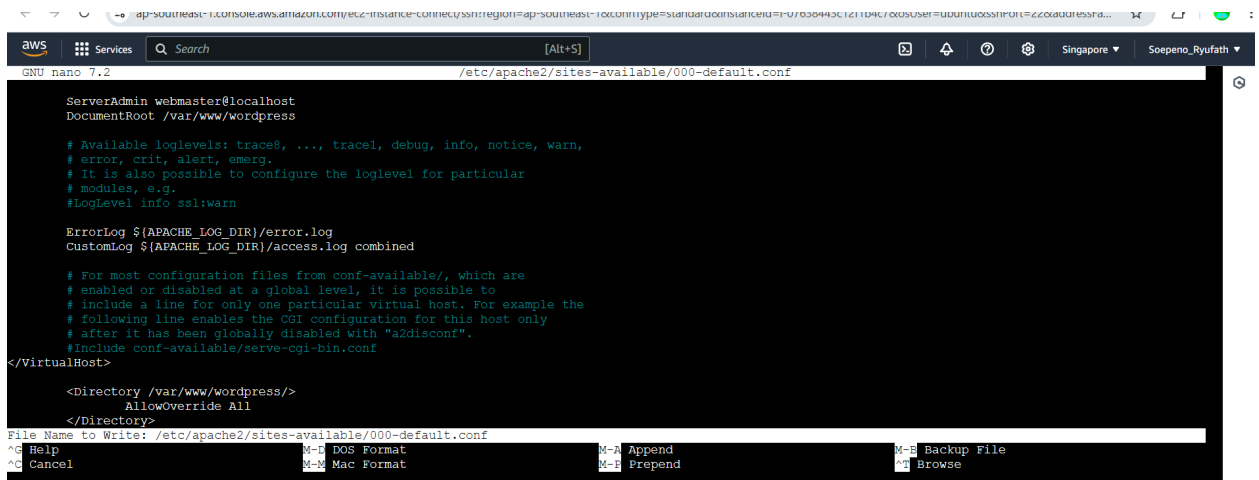
# For most configuration files from conf-available/, which are
# enabled or disabled at a global level, it is possible to
# include a line for only one particular virtual host. For example the
# following line enables the CGI configuration for this host only
# after it has been globally disabled with "a2disconf".
#Include conf-available/serve-cgi-bin.conf

</VirtualHost>

<Directory /var/www/wordpress/>
    AllowOverride All
</Directory>

```

- Write out the code and exit the GPU



```

File Name to Write: /etc/apache2/sites-available/000-default.conf
^G Help          M-D DOS Format    M-A Append        M-B Backup File
^C Cancel        M-M Mac Format    M-I Prepend       M-B Browse

```

Then write it in the linux terminal

- Run the wordpress

```

ubuntu@ip-172-31-13-222:~$ sudo a2enmod rewrite
Enabling module rewrite.
To activate the new configuration, you need to run:
systemctl restart apache2
ubuntu@ip-172-31-13-222:~$ sudo apachectl configtest
AH00112: Warning: DocumentRoot [/var/www/wordpress] does not exist
Syntax OK
ubuntu@ip-172-31-13-222:~$ sudo systemctl restart apache2
ubuntu@ip-172-31-13-222:~$ cd /tmp
ubuntu@ip-172-31-13-222:/tmp$ wget https://wordpress.org/latest.tar.gz
--2022-09-24 15:46:21-- https://wordpress.org/latest.tar.gz
Resolving wordpress.org (wordpress.org)... 198.143.164.252
Connecting to wordpress.org (wordpress.org)|198.143.164.252|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 21172479 (20M) [application/octet-stream]
Saving to: 'latest.tar.gz'

latest.tar.gz           100%[=====>]  20.19M  20.6MB/s   in 1.0s

2022-09-24 15:46:23 (20.6 MB/s) - 'latest.tar.gz' saved [21172479/21172479]

ubuntu@ip-172-31-13-222:/tmp$ tar xzvf latest.tar.gz

```

→ <https://ap-southeast-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-southeast-1&connType=standard&instanceId=i-07638443c12f1b4c7&osUser=ubuntu&sshPort=22&add...>

aws Services Search [Alt+S] Singapore Soepeno\_Ryufu

```

wordpress/wp-admin/js/color-picker.min.js
wordpress/wp-admin/js/site-icon.min.js
wordpress/wp-admin/js/auth-app.js
wordpress/wp-admin/js/code-editor.js
wordpress/wp-admin/js/common.js
wordpress/wp-admin/js/set-post-thumbnail.min.js
wordpress/wp-admin/js/postbox.min.js
wordpress/wp-admin/js/color-picker.js
wordpress/wp-admin/js/password-strength-meter.js
wordpress/wp-admin/js/customize-nav-menus.js
wordpress/wp-admin/js/editor-expand.js
wordpress/wp-admin/js/code-editor.min.js
wordpress/wp-admin/js/set-post-thumbnail.js
wordpress/wp-admin/options-permalink.php
wordpress/wp-admin/widgets.php
wordpress/wp-admin/setup-config.php
wordpress/wp-admin/install.php
wordpress/wp-admin/admin-header.php
wordpress/wp-admin/post-new.php
wordpress/wp-admin/themes.php
wordpress/wp-admin/options-reading.php
wordpress/wp-trackback.php
wordpress/wp-comments-post.php
ubuntu@ip-172-31-35-204:/tmp$ touch wordpress/ht.access
ubuntu@ip-172-31-35-204:/tmp$ cp wordpress/wp-config-sample.php wordpress/wp-config.php
ubuntu@ip-172-31-35-204:/tmp$ mkdir wordpress/wp-content/upgrade
ubuntu@ip-172-31-35-204:/tmp$ sudo cp /tmp/wordpress/. /var/www/wordpress
cp: -r not specified; omitting directory '/tmp/wordpress/.'
ubuntu@ip-172-31-35-204:/tmp$ sudo cp -a /tmp/wordpress/. /var/www/wordpress
cp: cannot create directory 'var/www/wordpress': No such file or directory
ubuntu@ip-172-31-35-204:/tmp$ sudo cp -a /tmp/wordpress/. /var/www/wordpress
ubuntu@ip-172-31-35-204:/tmp$ sudo chown -R www-data:www-data /var/www/wordpress
ubuntu@ip-172-31-35-204:/tmp$ sudo find /var/www/wordpress/ -type d -exec chmod 750 {} \;
ubuntu@ip-172-31-35-204:/tmp$ sudo find /var/www/wordpress/ -type f -exec chmod 640 {} \;
ubuntu@ip-172-31-35-204:/tmp$ sudo nano /var/www/wordpress/wp-config.php

```

This GPU will be shown

```

aws | Services | Search | [Alt+S] | Singapore | Soepeno_Ryufath
GNU nano 7.2 /var/www/wordpress/wp-config.php
1php
2/**
3 * The base configuration for WordPress
4 *
5 * The wp-config.php creation script uses this file during the installation.
6 * You don't have to use the website, you can copy this file to "wp-config.php"
7 * and fill in the values.
8 *
9 * This file contains the following configurations:
10 *
11 * Database settings
12 * Secret keys
13 * Database table prefix
14 * ABSPATH
15 *
16 * @link https://developer.wordpress.org/advanced-administration/wordpress/wp-config/
17 *
18 * @package WordPress
19 */
20
21/** Database settings - You can get this info from your web host ** //
22/** The name of the database for WordPress */
23define( 'DB_NAME', 'database_name_here' );
24
25[ Read 96 lines (Converted from DOS format) ]
26
27^G Help      ^O Write Out  ^W Where Is   ^R Cut        ^T Execute    ^C Location   ^U Undo       ^M Set Mark   ^_ To Bracket  ^P Previous
28^X Exit      ^R Read File  ^\ Replace    ^P Paste      ^J Justify    ^_ Go To Line ^E Redo       ^C Copy       ^G Where Was  ^N Next

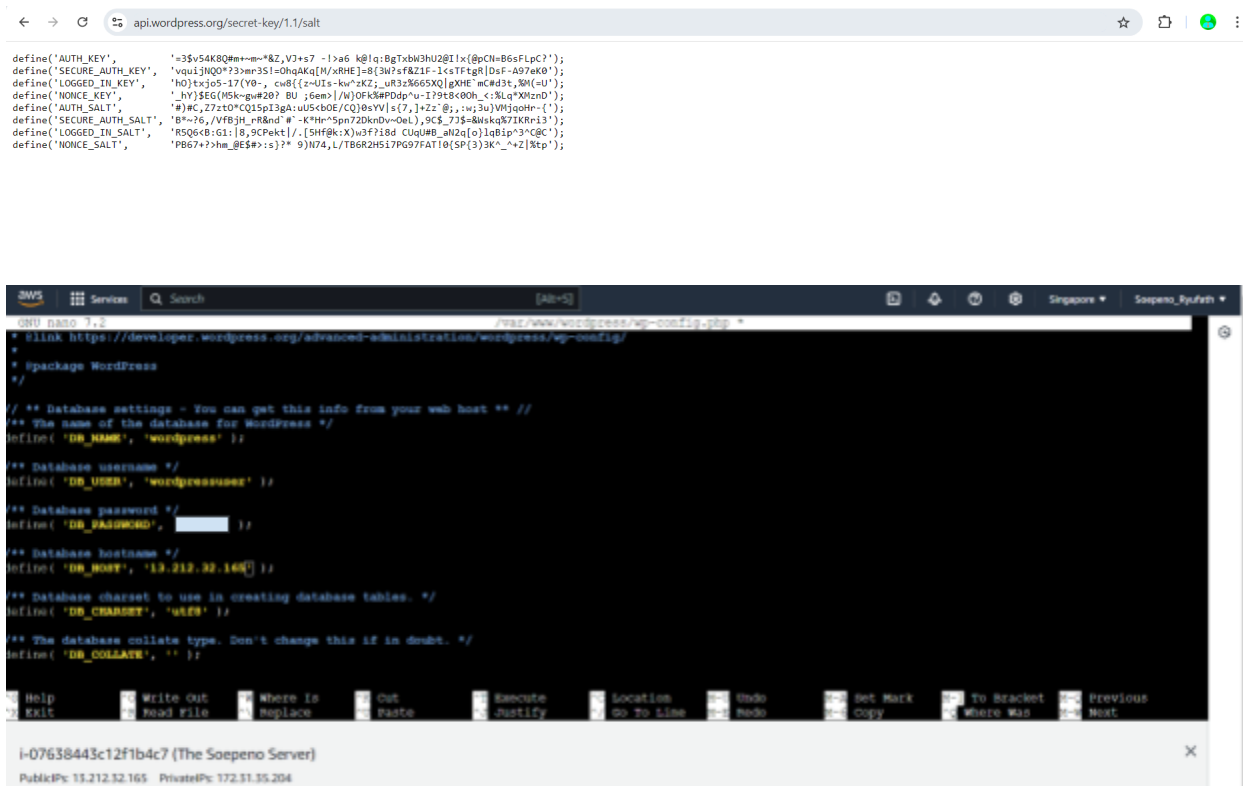
```

## 6. Define the database functions

```

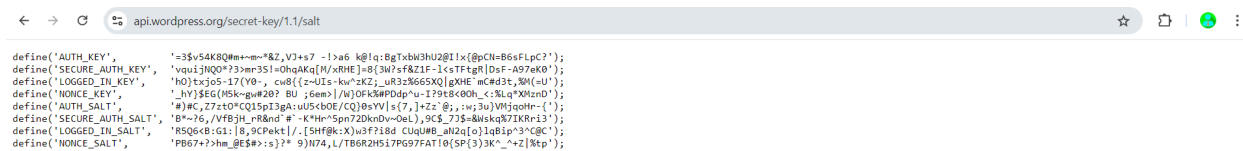
aws | Services | Search | [Alt+S] | Singapore | Soepeno_Ryufath
GNU nano 7.2 /var/www/wordpress/wp-config.php
1/**
2/** Database settings - You can get this info from your web host ** //
3/** The name of the database for WordPress */
4define( 'DB_NAME', 'database_name_here' );
5
6/** Database username */
7define( 'DB_USER', 'username_here' );
8
9/** Database password */
10define( 'DB_PASSWORD', 'password_here' );
11
12/** Database hostname */
13define( 'DB_HOST', 'localhost' );
14
15/** Database charset to use in creating database tables. */
16define( 'DB_CHARSET', 'utf8' );
17
18/** The database collate type. Don't change this if in doubt. */
19define( 'DB_COLLATE', '' );
20
21/**#@+
22 * Authentication unique keys and salts.
23 *

```



## 7. Copy the digits of the keys:

Add a new tab and see if the constraints have been added:



Once that, input it to this:

```

aws ap-southeast-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-southeast-1&connType=standard&instanceId=i-07638443c12f1b4c7&osUser=ubuntu&sshPort=22&addressFa...
GNU nano 7.2 /var/www/wordpress/wp-config.php
* Change these to different unique phrases! You can generate these using
* the ([link https://api.wordpress.org/secret-key/1.1/salt/ WordPress.org secret-key service]).
*
* You can change these at any point in time to invalidate all existing cookies.
* This will force all users to have to log in again.
*
* @since 2.6.0
*/
define( 'AUTH_KEY', 'put your unique phrase here' );
define( 'SECURE_AUTH_KEY', 'put your unique phrase here' );
define( 'LOGGED_IN_KEY', 'put your unique phrase here' );
define( 'NONCE_KEY', 'put your unique phrase here' );
define( 'AUTH_SALT', 'put your unique phrase here' );
define( 'SECURE_AUTH_SALT', 'put your unique phrase here' );
define( 'LOGGED_IN_SALT', 'put your unique phrase here' );
define( 'NONCE_SALT', 'put your unique phrase here' );

/**#@-*/

/**
 * WordPress database table prefix.
 *
 * You can have multiple installations in one database if you give each

```

```

aws ap-southeast-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-southeast-1&connType=standard&instanceId=i-07638443c12f1b4c7&osUser=ubuntu&sshPort=22&addressFa...
GNU nano 7.2 /var/www/wordpress/wp-config.php
* Change these to different unique phrases! You can generate these using
* the ([link https://api.wordpress.org/secret-key/1.1/salt/ WordPress.org secret-key service]).
*
* You can change these at any point in time to invalidate all existing cookies.
* This will force all users to have to log in again.
*
* @since 2.6.0
*/
define( 'AUTH_KEY', '3$54K9Q#m+-m-*6Z,VJ+e7 -!>a6 k8!q:BgTxbW3bu2E!x(pCN=B6sFlpC?)';
define( 'SECURE_AUTH_KEY', 'vquiJNQ0*?3>mr3S!=OhqAKq[M/xRHE]=8{3W?sf6Z1f-L<stTtgR|DeF-A97eK0!';
define( 'LOGGED_IN_KEY', 'h0)txje5-17(Y0-, cw8{[z-UIs-kw^zKZ; ur3z4665XQ|qxHE' mC#d3t,8M(=U)';
define( 'NONCE_KEY', 'hY)$EG(M5k-gw#20? BU ;6em>|/W)OPk$#PDdp^u-I?9t8<0Oh <:lq*XMznD)';
define( 'AUTH_SALT', '#)c,Z7zto*Q15pI3gA:uU5<boE/CQ)0sVvIs(7,]+Zz @; ;w;3u)VMjgoHr-(')';
define( 'SECURE_AUTH_SALT', 'B*~?6,/VZBjH rR&nd'#^-K*Hr^5pn72DknDv=OeL,9C$ 7J$=6Wskq$7IKRri3)';
define( 'LOGGED_IN_SALT', 'R5Q6<B:G1:|8,9CPekt|/.{5Hf@k:X)w3f?i8d CUqU#B_aN2q[ol]qBip^3^c@cC)';
define( 'NONCE_SALT', 'PB67+?>hm_EE$#>:s)?* 9)N74,L/TB6R2H517FG97FAT!0(SP{3)3K^_^+z!tp)';

/**#@-*/

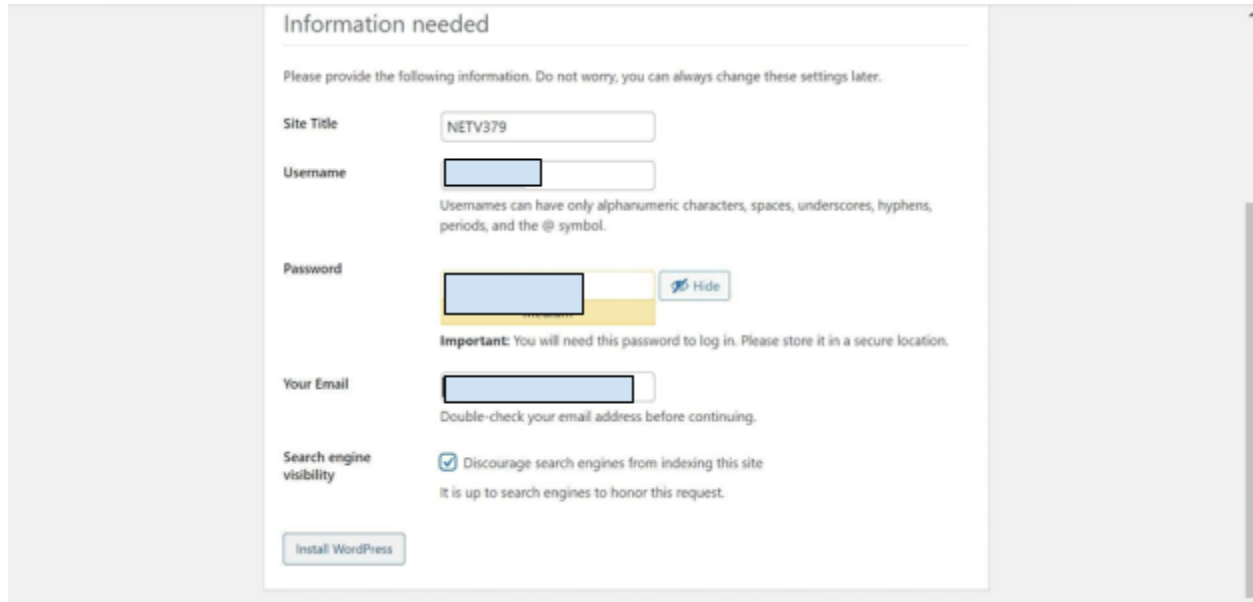
/**
 * WordPress database table prefix.
 *
 * You can have multiple installations in one database if you give each

```

## Part 4: Running Wordpress:

1. Input your ip address as your wordpress website address, in my case, it is 13.212.32.165

Once that, you will be lead to this window, where you will need to input your information



The image shows the 'Information needed' step of the WordPress installation process. It contains several input fields and checkboxes. The 'Site Title' field is filled with 'NETV379'. The 'Username' field is empty, with a note below it stating that usernames can only contain alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol. The 'Password' field is empty, with a 'Hide' button to its right and an 'Important' note below it stating that the password is needed for login and should be stored securely. The 'Your Email' field is empty, with a note below it to double-check the email address. The 'Search engine visibility' section has a checked checkbox for 'Discourage search engines from indexing this site' and a note below it stating that it is up to search engines to honor this request. At the bottom, there is an 'Install WordPress' button.

Information needed

Please provide the following information. Do not worry, you can always change these settings later.

Site Title

Username

Usenames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.

Password

[Hide](#)

**Important:** You will need this password to log in. Please store it in a secure location.

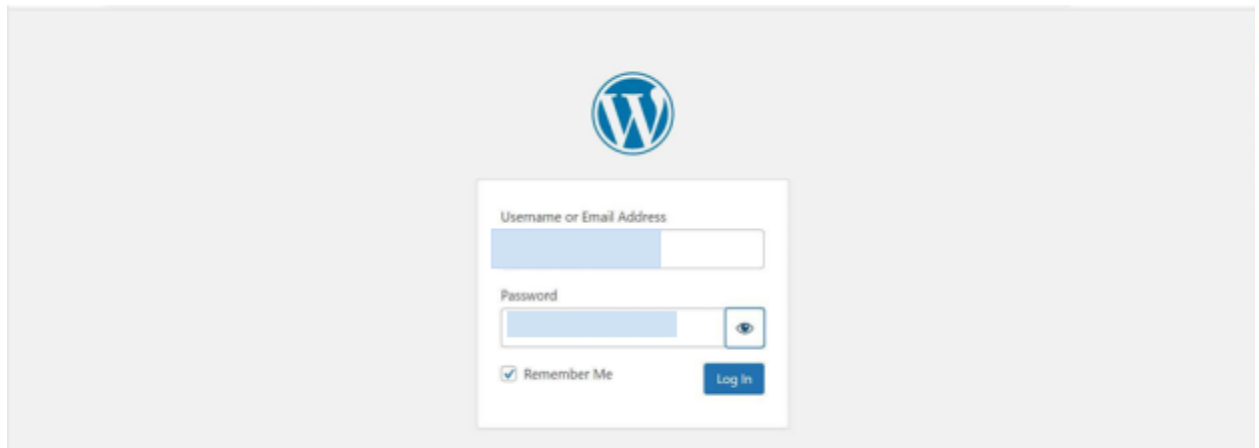
Your Email

Double-check your email address before continuing.


Search engine visibility ☒ Discourage search engines from indexing this site  
It is up to search engines to honor this request.

[Install WordPress](#)

2. Once the information is filled, the wordpress site will ask you to log in again



The image shows the WordPress login screen. It features the WordPress logo at the top. Below the logo is a login form with two input fields: 'Username or Email Address' and 'Password'. The 'Username or Email Address' field is filled with a blue bar. The 'Password' field is empty, with a 'Show' button to its right. Below the password field is a checked checkbox for 'Remember Me' and a 'Log In' button.

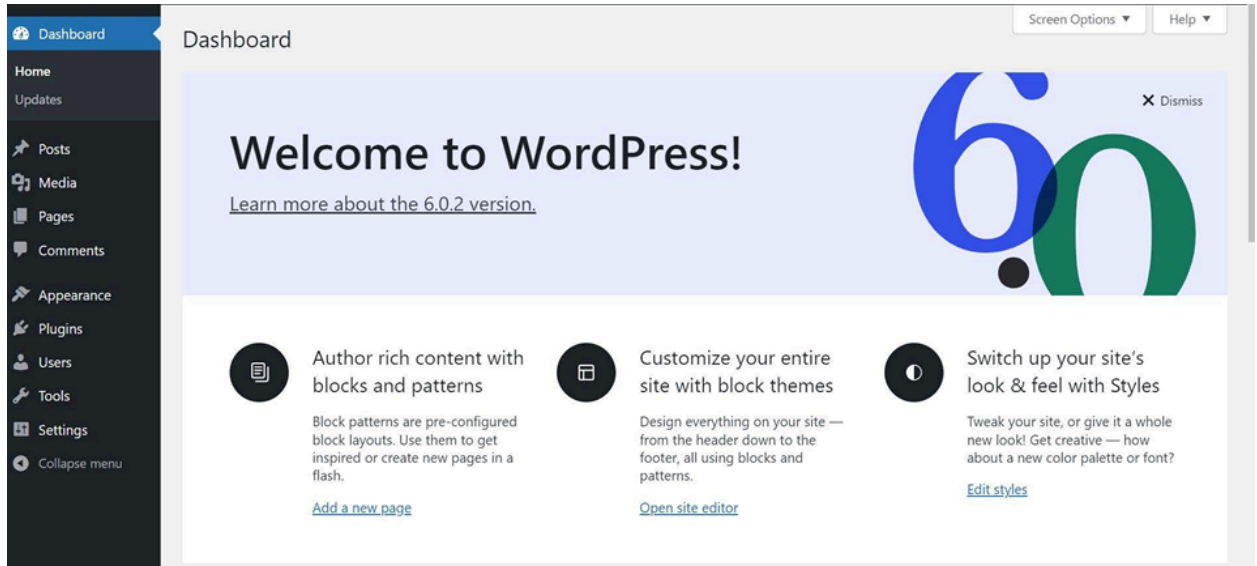


Username or Email Address

Password

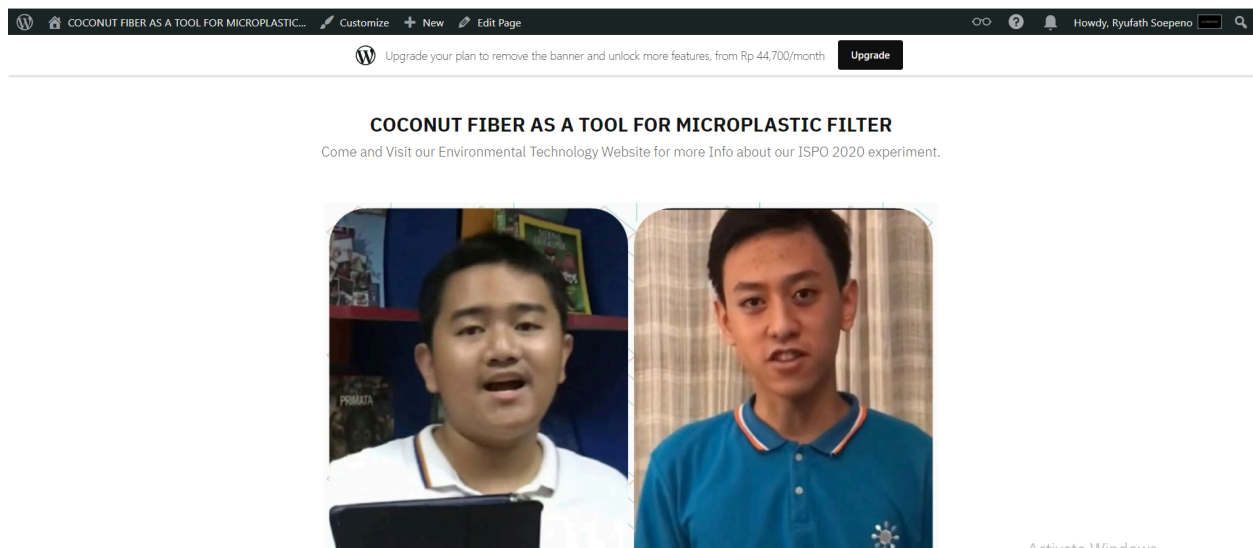
☒ Remember Me [Log In](#)

And you will be lead to the wordpress dashboard



### 3. Output

I wanted to do a little experiment, I actually have already build a wordpress website before for my highschool project olympiad, and so for this output, I exported my wordpress website to my aws dashboard.



Here is the link to my wordpress website:

<http://13.212.32.165/2024/10/20/coconutfiberasatoolformicroplasticfilter>



However if for some reason, the AWS wasn't able to connect, click this link:

[https://coconutfiberasatoolformicroplasticfilter.wordpress.com/?\\_gl=1\\*4k7r4i\\*\\_gcl\\_au\\*MTA0MjUwMjEyOS4xNzI4ODg5Njc4](https://coconutfiberasatoolformicroplasticfilter.wordpress.com/?_gl=1*4k7r4i*_gcl_au*MTA0MjUwMjEyOS4xNzI4ODg5Njc4)

## 4. Insights & Analysis

During this lab study, I noticed a few errors in my side and my version of the AWS instance that I was working on:

- I noticed that an attempt to input the password, the terminal hides it without showing any word or asterisk, which shows the security of the instance terminal. This was something new for me.
- Sometimes I get errors where the output is shown on the linux prompt and it hinders my input sometimes

```

aws [Alt+S]
Get:8 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libde265-0 amd64 1.0.15-1build3 [166 kB]
Get:9 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libdeflate0 amd64 1.19-1build1.1 [43.9 kB]
Get:10 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libfontconfig1 amd64 2.15.0-1.1ubuntu2 [139 kB]
Get:11 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libsharpyuv0 amd64 1.3.2-0.4build3 [15.8 kB]
Get:12 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libheif-plugin-aomdec amd64 1.17.6-1ubuntu4 [10.3 kB]
Get:13 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libheif-plugin-libde265 amd64 1.17.6-1ubuntu4 [8158 B]
Get:14 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libheif1 amd64 1.17.6-1ubuntu4 [276 kB]
Get:15 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libjpeg-turbo8 amd64 2.1.5-2ubuntu2 [150 kB]
Get:16 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libjpeg8 amd64 8c-2ubuntu1 [2148 B]
Get:17 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libjbig0 amd64 2.1-6.1ubuntu2 [29.7 kB]
Get:18 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 liblerc4 amd64 4.0.0+ds-4ubuntu2 [179 kB]
Get:19 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libwebp7 amd64 1.3.2-0.4build3 [230 kB]
Get:20 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libtiff6 amd64 4.5.1+git230720-4ubuntu2.2 [199 kB]
Get:21 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libxpm4 amd64 1:3.5.17-1build2 [36.5 kB]
Get:22 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libgd3 amd64 2.3.3-9ubuntu5 [128 kB]
Get:23 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libheif-plugin-aomenc amd64 1.17.6-1ubuntu4 [14.7 kB]
Get:24 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libzip4 amd64 1.7.3-1.1ubuntu2 [53.6 kB]
Get:25 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 php8.3-curl amd64 8.3.6-0ubuntu0.24.04.2 [40.3 kB]
Get:26 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 php-curl all 2:8.3+93ubuntu2 [1836 B]
Get:27 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 php8.3-gd amd64 8.3.6-0ubuntu0.24.04.2 [31.1 kB]
Get:28 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 php-gd all 2:8.3+93ubuntu2 [1830 B]
Get:29 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 php8.3-intl amd64 8.3.6-0ubuntu0.24.04.2 [156 kB]
Get:30 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 php-intl all 2:8.3+93ubuntu2 [1846 B]
Get:31 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 php8.3-mbstring amd64 8.3.6-0ubuntu0.24.04.2 [512 kB]
Get:32 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 php-mbstring all 2:8.3+93ubuntu2 [1848 B]
Get:33 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 php8.3-soap amd64 8.3.6-0ubuntu0.24.04.2 [133 kB]
Get:34 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 php-soap all 2:8.3+93ubuntu2 [1836 B]
Get:35 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 php-xml all 2:8.3+93ubuntu2 [1856 B]
Get:36 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 php-xml all 2:8.3+93ubuntu2 [1856 B]
Get:37 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 php8.3-zip amd64 8.3.6-0ubuntu0.24.04.2 [29.5 kB]
Get:38 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 php-zip all 2:8.3+93ubuntu2 [1832 B]
Fetched 6089 kB in 2s (2755 kB/s)
Extracting templates from packages: 100%
Scanning processes...
ubuntu@ip-172-31-35-204:~$ [r]ound2enmode rewrite
  
```

However, this was solved by pressing enter, since will help navigate the code out of the output

- When I DB-HOST, localhost does not work, so I changed it to my IP Address instead



```
007 nano 1.2 /usr/www/wordpress/wp-config.php
* Link: https://developer.wordpress.org/advanced-administration/wordpress/wp-config/
*
$!package WordPress
$!
// ** Database settings - You can get this info from your web host ** //
** The name of the database for WordPress **
define( 'DB_NAME', 'wordpress' )

** Database username **
define( 'DB_USER', 'wordpressuser' )

** Database password **
define( 'DB_PASSWORD', '' )

** Database hostname **
define( 'DB_HOST', '13.212.32.146' )

** Database charset to use in creating database tables. **
define( 'DB_CHARSET', 'utf8' )

** The database collate type. Don't change this if in doubt. **
define( 'DB_COLLATE', '' )

Help  Write Out  Where Is  Cut  Execute  Location  Undo  Get Mark  To Bracket  Previous
Exit  Read File  Replace  Paste  Purify  Go To Line  Redo  Copy  Where Was  Next

i-07638443c12f1b4c7 (The Soepeno Server)
PublicPv: 13.212.32.146 PrivatePv: 172.31.35.204
```

## 5. Conclusion

Overall, this lab case study has equipped me with the basic knowledge and experience in using AWS as an instance to manage my activities, shared and managed under a cloud computing service. And although there were errors or inconsistencies on my side, I managed to solve and mitigate most of them in many different ways.