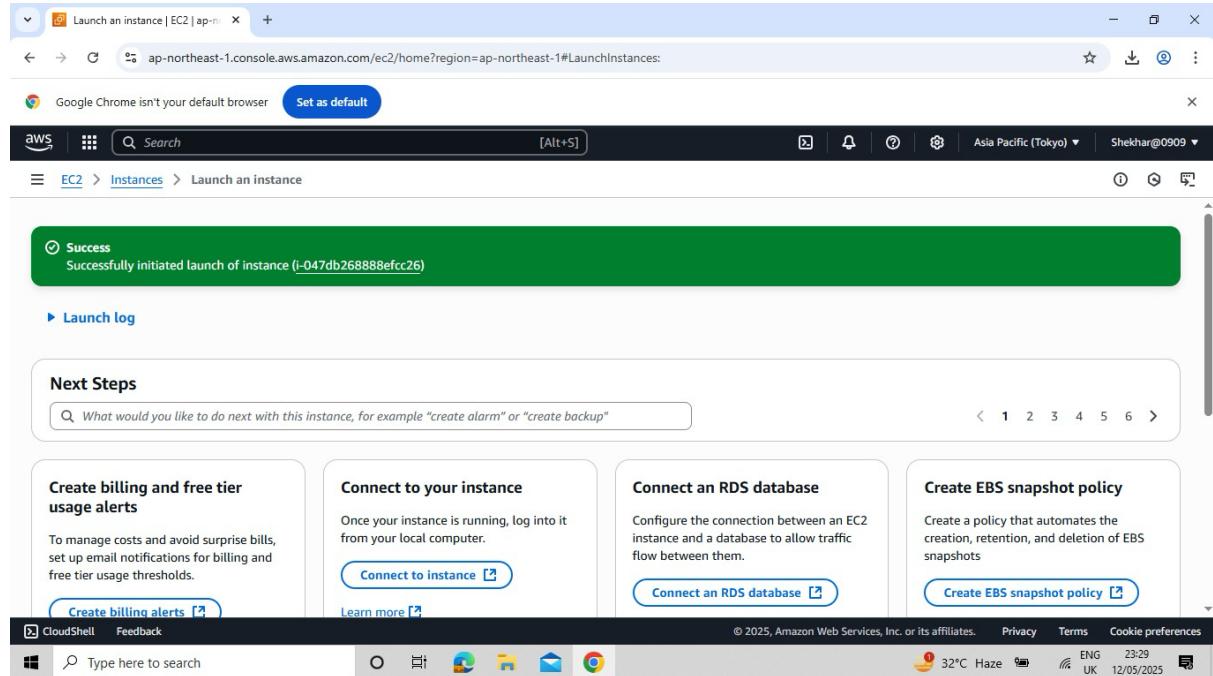


# Techplement Cloud Task 1

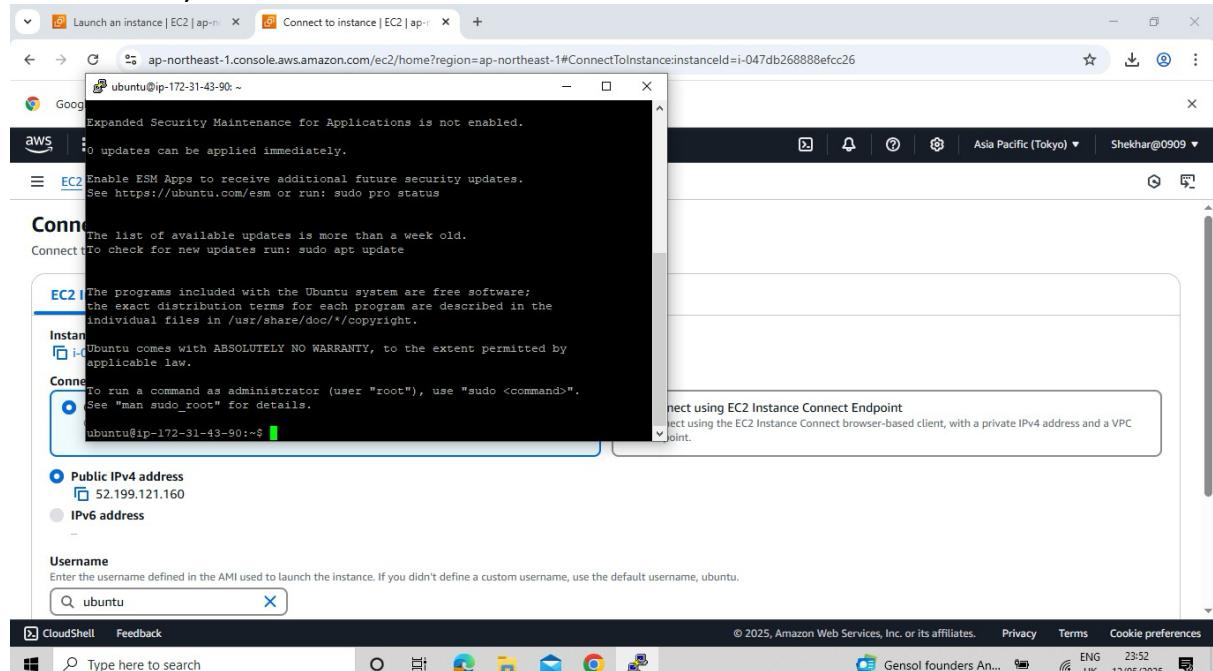
Shashi Shekhar

## Monolithic Architecture:

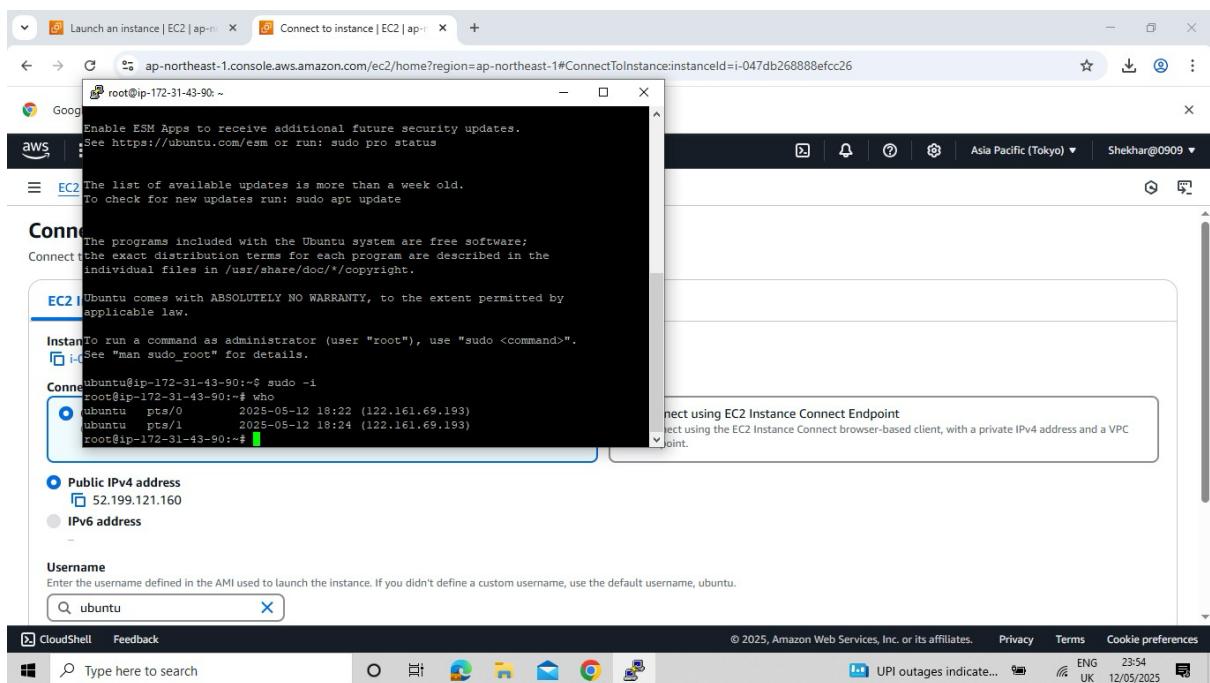
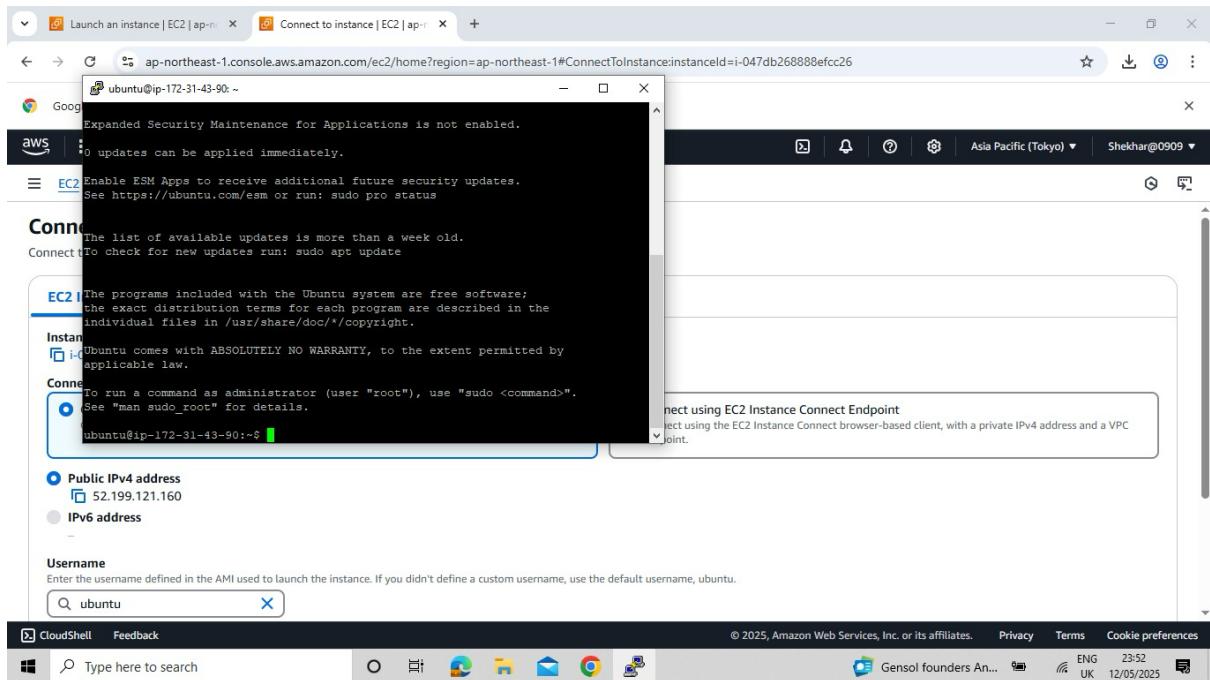
Launched the instance



## Installed Putty To SSH



Started installing and updating Mysql and Wordpress



The screenshot shows a web browser window with two tabs: "Launch an instance | EC2 | ap-northeast-1" and "Connect to instance | EC2 | ap-northeast-1".

The left pane displays the AWS CloudShell interface, which includes:

- A sidebar with sections for "EC2", "Instances", "Connect", and "CloudWatch Metrics".
- A "Public IPv4 address" section showing "52.199.121.160".
- An "IPv6 address" section.
- A "Username" field containing "ubuntu".

The right pane shows a terminal session titled "root@ip-172-31-43-90: ~". The terminal output is as follows:

```
Get:46 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [182 kB]
Get:47 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Component [82.2 kB]
Get:48 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [17.0 kB]
Get:49 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [1041 kB]
Get:50 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [218 kB]
Get:51 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 kB]
Get:52 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 c-n-f Metadata [468 kB]
Get:53 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [17.7 kB]
Get:54 http://security.ubuntu.com/ubuntu noble-security/multiverse Translation-en [3792 kB]
Get:55 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 kB]
Get:56 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [380 kB]
Fetched 34.0 MB in 26s (1285 kB/s)
```

A modal dialog box titled "Connect using EC2 Instance Connect Endpoint" is open, providing instructions for connecting using the EC2 Instance Connect browser-based client.

The screenshot shows a web browser window with two tabs: "Launch an instance | EC2 | ap-northeast-1" and "Connect to instance | EC2 | ap-northeast-1".

The left pane displays the AWS CloudShell interface, which includes:

- A sidebar with sections for "EC2", "Instances", "Connect", and "CloudWatch Metrics".
- A "Public IPv4 address" section showing "52.199.121.160".
- An "IPv6 address" section.
- A "Username" field containing "ubuntu".

The right pane shows a terminal session titled "root@ip-172-31-43-90: ~". The terminal output is as follows:

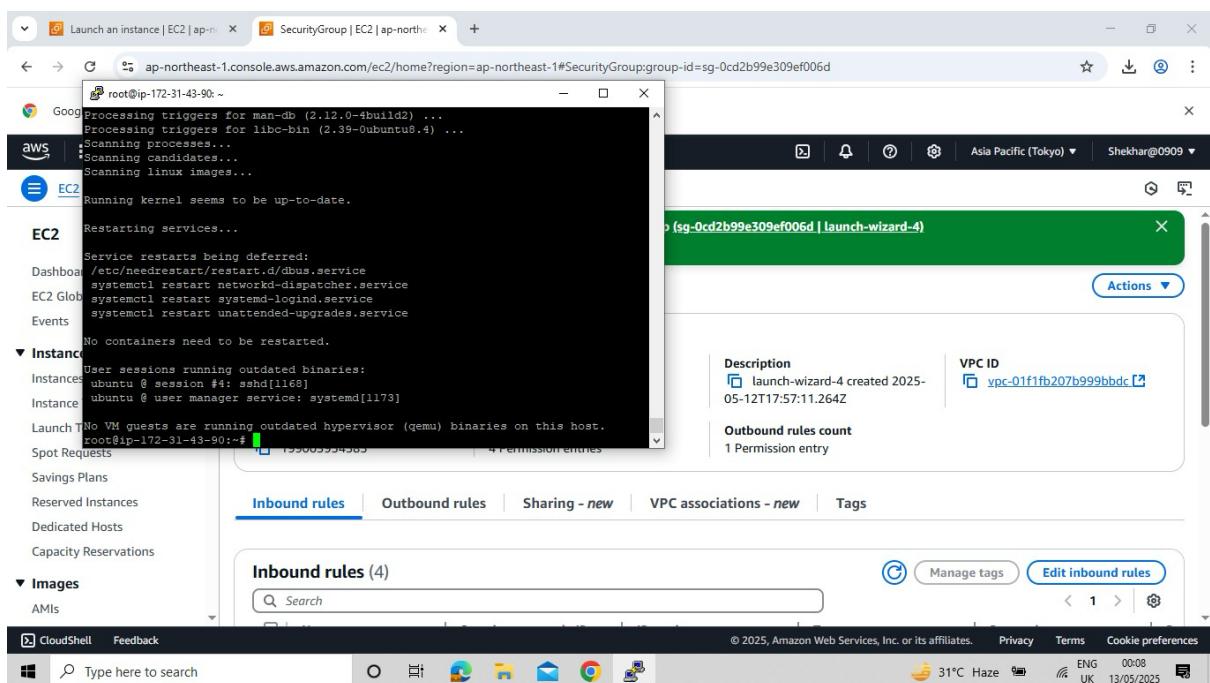
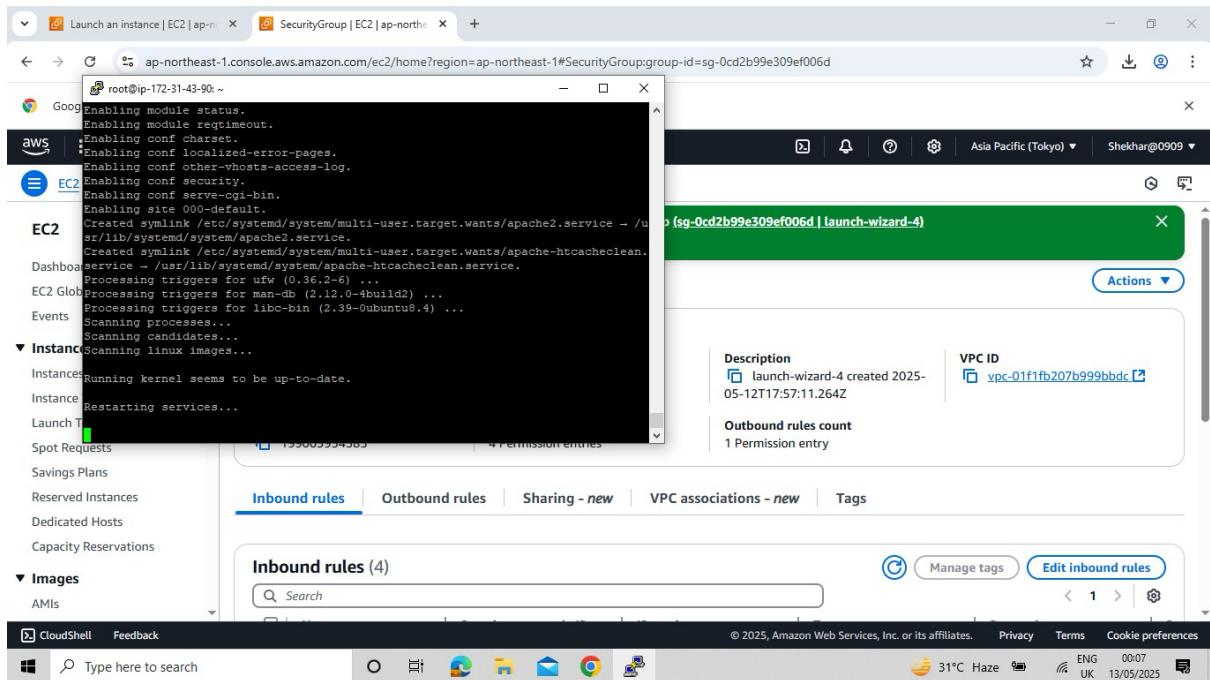
```
Calculating upgrade... Done
The following upgrades have been deferred due to phasing:
  : grub-common grub-efi-amd64-bin grub-pc grub-pc-bin grub2-common
The following packages have been kept back:
  grub-efi-amd64-signed linux-aws linux-headers-aws linux-image-aws
The following packages will be upgraded:
  apparmor aptapt-core-dump-handler cloud-init dimmqr distro-info-data
  fswatch gpgv gpgv-keyboxd landscape-common libapparmor libarchive13t64 libbdwlt64
  libelf1t64 libexpat1 libfwupd2 liblizma5 libnetplan libnss-systemd
  libpam-systemd libpix15_38t64 libplymouth5 libsystemd-shared libsystemd0
  libudev1 libxkbcommon0 libxkbutil1 libxkbutil1:i libxkbutil1:linux-tools-common netplan-generator
  netplan.io openssh-client openssh-server openssh-sftp-server pci.ids perl-base perl-modules-5.38 plymouth plymouth-chrome-ubuntu-text
  python3-apport python3-jinja2 python3-neplan python3-problem-report
  python3-software-properties rsyslog snapd software-properties-common
  sso-report systemd systemd-dev systemd-resolved systemd-sysv tzdata
  tzdata-legacy ubuntu-pro-client ubuntu-pro-client-l10n udev
  update-notifier-common vim vim-common vim-runtime vim-vim xxd xz-utils
73 upgraded; 0 newly installed, 0 to remove and 9 not upgraded.
Need to get 75.0 MB of archives.
After this operation, 782 KB of additional disk space will be used.
N: Some packages may have been kept back due to phasing.
Do you want to continue? [Y/n]
```

A modal dialog box titled "Connect using EC2 Instance Connect Endpoint" is open, providing instructions for connecting using the EC2 Instance Connect browser-based client.

The screenshot shows the AWS CloudShell interface. On the left, a terminal window titled 'root@ip-172-31-43-90: ~' displays system status and service restart logs. On the right, the main pane shows EC2 instance details: 'No containers need to be restarted', 'User sessions running outdated binaries' (ubuntu 0 session #4: sshd[1168]), and 'No VM guests are running outdated hypervisor (qemu) binaries on this host'. Below this, connection options are listed: 'Public IPv4 address' (52.199.121.160) and 'IPv6 address'. A 'Username' field is set to 'ubuntu'. At the bottom, a search bar and various browser icons are visible.

## Updating and adding an inbound rule

The screenshot shows the AWS Security Groups console. The left sidebar lists 'Instances' (Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations) and 'Images' (AMIs). The main pane displays the 'sg-0cd2b99e309ef006d - launch-wizard-4' security group. A green banner at the top indicates 'Inbound security group rules successfully modified on security group (sg-0cd2b99e309ef006d | launch-wizard-4)'. The 'Details' section shows the security group name ('launch-wizard-4'), ID ('sg-0cd2b99e309ef006d'), owner ('199003954585'), and VPC ID ('vpc-01f1fb207b999bbdc'). Below this, the 'Inbound rules' tab is selected, showing four entries. The bottom of the screen shows the CloudShell interface and standard browser controls.



root@ip-172-31-43-90:~

```
User sessions running outdated binaries:  
ubuntu @ session #4: sshd[1168]  
ubuntu @ user manager service: systemd[1173]  
  
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
root@ip-172-31-43-90:~# sudo mysql -u root  
Welcome to the MySQL monitor. Commands end with ; or \g.  
Your MySQL connection id is 8  
Server version: 8.0.42-Ubuntu0.24.04.1 (Ubuntu)  
  
Copyright (c) 2000, 2025, 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> [1]+ Stopped sudo mysql -u root  
root@ip-172-31-43-90:~# sudo mysql -u root  
Welcome to the MySQL monitor. Commands end with ; or \g.  
Your MySQL connection id is 9  
Server version: 8.0.42-Ubuntu0.24.04.1 (Ubuntu)  
  
Copyright (c) 2000, 2025, 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> ▼ Images
```

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root@ip-172-31-43-90:~

```
fg  
"c  
/c  
help' at line 3  
mysql> "\c"  
-> '\h'  
-> help;  
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 ''\c'  
\h  
help' at line 1  
mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password by 'Testpassword@123';  
Query OK, 0 rows affected (0.01 sec)  
  
mysql> CREATE USER 'wp_user'@localhost IDENTIFIED BY 'Testpassword@123';  
Query OK, 0 rows affected (0.02 sec)  
  
mysql> CREATE DATABASE wp;  
Query OK, 1 row affected (0.00 sec)  
  
mysql> GRANT ALL PRIVILEGES ON wp.* TO 'wp_user'@localhost;  
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 'PRIVILEGES ON wp.* TO 'wp_user'@localhost' at line 1  
mysql> GRANT ALL PRIVILEGES ON wp.* TO 'wp_user'@localhost;  
Query OK, 0 rows affected (0.00 sec)  
  
mysql> exit  
Bye  
root@ip-172-31-43-90:~# ▼ Images
```

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root@ip-172-31-43-90:~

```
fg
^C
/c
help' at line 3
mysql> '\c'
-> '\h'
-> help;
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 ``\c'
`h'
help' at line 1
mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password by 'Testpassword@123';
Query OK, 0 rows affected (0.01 sec)

mysql> CREATE USER'wp_user'@localhost IDENTIFIED BY 'Testpassword@123';
Query OK, 0 rows affected (0.02 sec)

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

mysql> GRANT ALL PRIVILEGES ON wp.* TO 'wp_user'@localhost;
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 'PRIVILEGES ON wp.* TO 'wp_user'@localhost' at line 1
mysql> GRANT ALL PRIVILEGES ON wp.* TO 'wp_user'@localhost;
Query OK, 0 rows affected (0.00 sec)

mysql> exit
Bye
root@ip-172-31-43-90:~# cd/tmp
-bash: cd/tmp: No such file or directory
root@ip-172-31-43-90:~#
```

▼ Images

AMIs

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31°C Haze ENG 00:54 UK 13/05/2025

root@ip-172-31-43-90:/tmp

```
help' at line 1
mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password by 'Testpassword@123';
Query OK, 0 rows affected (0.01 sec)

mysql> CREATE USER'wp_user'@localhost IDENTIFIED BY 'Testpassword@123';
Query OK, 0 rows affected (0.02 sec)

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

mysql> GRANT ALL PRIVILEGES ON wp.* TO 'wp_user'@localhost;
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 'PRIVILEGES ON wp.* TO 'wp_user'@localhost' at line 1
mysql> GRANT ALL PRIVILEGES ON wp.* TO 'wp_user'@localhost;
Query OK, 0 rows affected (0.00 sec)

mysql> exit
Bye
root@ip-172-31-43-90:~# cd/tmp
-bash: cd/tmp: No such file or directory
root@ip-172-31-43-90:~# cd /tmp
root@ip-172-31-43-90:/tmp# wget https://wordpress.org/latest.tar.gz
--2025-05-12 19:26:23-- 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: 26926501 (2.6M) [application/octet-stream]
Saving to: 'latest.tar.gz'

latest.tar.gz          100%[=====]  25.68M  180KB/s   in 2m 29s

2025-05-12 19:28:53 (177 KB/s) - 'latest.tar.gz' saved [26926501/26926501]

root@ip-172-31-43-90:/tmp#
root@ip-172-31-43-90:/tmp#
```

▼ Images

AMIs

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Uptime Outages indicate... ENG 01:01 UK 13/05/2025

```
root@ip-172-31-43-90:/tmp
wordpress/wp-includes/widgets/class-wp-nav-menu-widget.php
wordpress/wp-includes/widgets/class-wp-widget-archives.php
wordpress/wp-includes/widgets/class-wp-widget-block.php
wordpress/wp-includes/widgets/class-wp-widget-calendar.php
wordpress/wp-includes/widgets/class-wp-widget-categories.php
wordpress/wp-includes/widgets/class-wp-widget-custom-html.php
wordpress/wp-includes/widgets/class-wp-widget-links.php
wordpress/wp-includes/widgets/class-wp-widget-media-audio.php
wordpress/wp-includes/widgets/class-wp-widget-media-gallery.php
wordpress/wp-includes/widgets/class-wp-widget-media-image.php
wordpress/wp-includes/widgets/class-wp-widget-media-video.php
wordpress/wp-includes/widgets/class-wp-widget-media.php
wordpress/wp-includes/widgets/class-wp-widget-meta.php
wordpress/wp-includes/widgets/class-wp-widget-pages.php
wordpress/wp-includes/widgets/class-wp-widget-recent-comments.php
wordpress/wp-includes/widgets/class-wp-widget-recent-posts.php
wordpress/wp-includes/widgets/class-wp-widget-rss.php
wordpress/wp-includes/widgets/class-wp-widget-search.php
wordpress/wp-includes/widgets/class-wp-widget-tag-cloud.php
wordpress/wp-includes/widgets/class-wp-widget-text.php
wordpress/wp-includes/widgets.php
wordpress/wp-includes/wp-db.php
wordpress/wp-includes/wp-diff.php
wordpress/wp-links-opml.php
wordpress/wp-load.php
wordpress/wp-login.php
wordpress/wp-mail.php
wordpress/wp-settings.php
wordpress/wp-signup.php
wordpress/wp-trackback.php
wordpress/xmlrpc.php
root@ip-172-31-43-90:/tmp# sudo rm -rf /var/www/html/*
root@ip-172-31-43-90:/tmp# sudo mv wordpress/ /var/www/html
root@ip-172-31-43-90:/tmp# sudo systemctl restart apache2
root@ip-172-31-43-90:/tmp#
```

Images

AMIs

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Now WordPress is active on our EC2 instance

```
root@ip-172-31-43-90:/tmp
wordpress/wp-includes/widgets.php
wordpress/wp-includes/wp-db.php
wordpress/wp-includes/wp-diff.php
wordpress/wp-links-opml.php
wordpress/wp-load.php
wordpress/wp-login.php
wordpress/wp-mail.php
wordpress/wp-settings.php
wordpress/wp-signup.php
wordpress/wp-trackback.php
wordpress/xmlrpc.php
root@ip-172-31-43-90:/tmp# sudo rm -rf /var/www/html/*
root@ip-172-31-43-90:/tmp# sudo mv wordpress/ /var/www/html
root@ip-172-31-43-90:/tmp# sudo systemctl restart apache2
root@ip-172-31-43-90:/tmp# systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Mon 2025-05-12 19:40:39 UTC; 4min 9s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 22885 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
 Main PID: 22888 (apache2)
   Tasks: 6 (limit: 1129)
  Memory: 11.2M (peak: 11.4M)
    CPU: 51ms
   CGroup: /system.slice/apache2.service
           └─22888 /usr/sbin/apache2 -k start
              ├─22890 /usr/sbin/apache2 -k start
              ├─22891 /usr/sbin/apache2 -k start
              ├─22892 /usr/sbin/apache2 -k start
              ├─22893 /usr/sbin/apache2 -k start
              └─22894 /usr/sbin/apache2 -k start

May 12 19:40:39 ip-172-31-43-90 systemd[1]: Starting apache2.service - The Apache HTTP Server...
May 12 19:40:39 ip-172-31-43-90 systemd[1]: Started apache2.service - The Apache HTTP Server.
root@ip-172-31-43-90:/tmp#
```

Customize Chrome

CloudShell Feedback

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## Setting the user, password etc in WordPress

The screenshot shows a Windows desktop environment. A browser window is open at the URL [52.199.121.160/wordpress/wp-admin/setup-config.php](http://52.199.121.160/wordpress/wp-admin/setup-config.php). The page displays the initial steps for setting up WordPress, including the required database information and a note about creating wp-config.php. A 'Let's go!' button is visible at the bottom. The taskbar at the bottom of the screen shows various pinned icons and system status.

The screenshot shows the same Windows desktop environment, but the browser window has changed to [52.199.121.160/wordpress/wp-admin/setup-config.php?step=2](http://52.199.121.160/wordpress/wp-admin/setup-config.php?step=2). This page informs the user that they cannot write to wp-config.php and provides the configuration rules for the file. It includes a code block for wp-config.php with comments explaining the base configuration and installation process. The taskbar remains consistent with the previous screenshot.

root@ip-172-31-43-90: /var/www/html/wordpress

```
wordpress/wp-links-opml.php
wordpress/wp-load.php
wordpress/wp-login.php
wordpress/wp-mail.php
wordpress/wp-settings.php
wordpress/wp-signup.php
wordpress/wp-trackback.php
wordpress/xmlrpc.php

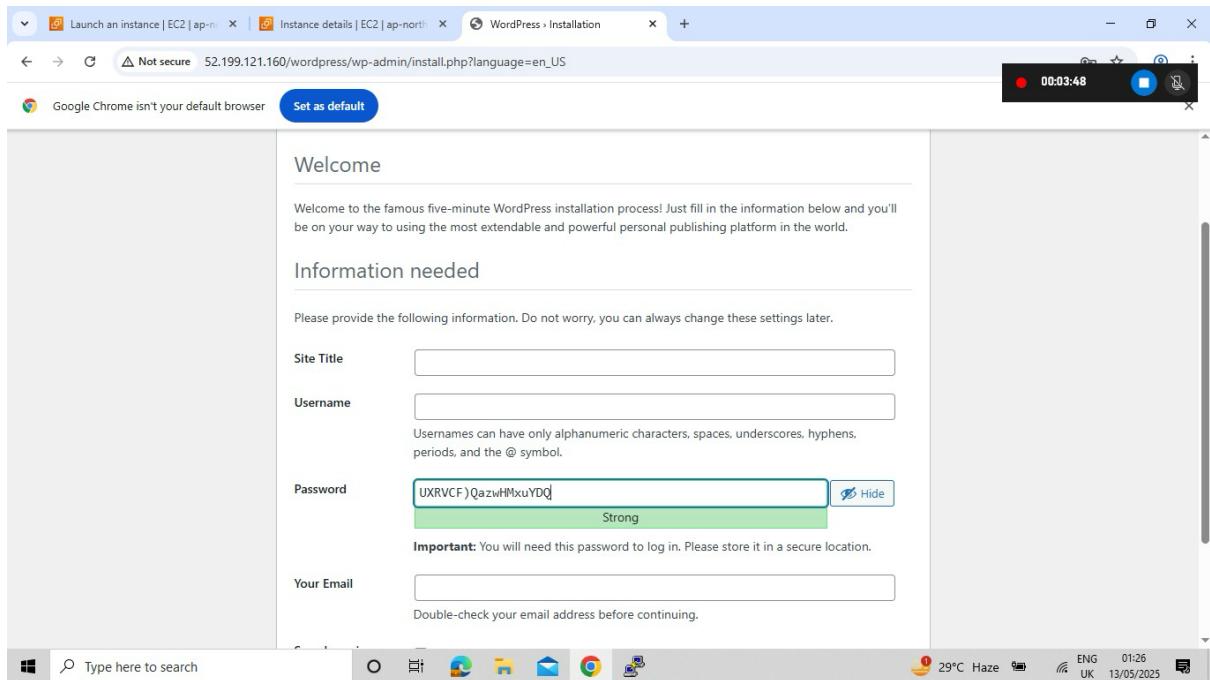
root@ip-172-31-43-90:/tmp# sudo rm -rf /var/www/html/*
root@ip-172-31-43-90:/tmp# sudo mv wordpress/ /var/www/html
root@ip-172-31-43-90:/tmp# sudo systemctl restart apache2
root@ip-172-31-43-90:/tmp# systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Mon 2025-05-12 19:40:39 UTC; 4min 9s ago
     Docs: https://httpd.apache.org/docs/2.4/
  Process: 22885 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
 Main PID: 22888 (apache2)
   Tasks: 6 (limit: 1129)
  Memory: 11.2M (peak: 11.4M)
    CPU: 5ms
   CGroup: /system.slice/apache2.service
           └─22888 /usr/sbin/apache2 -k start
              ├─22890 /usr/sbin/apache2 -k start
              ├─22891 /usr/sbin/apache2 -k start
              ├─22892 /usr/sbin/apache2 -k start
              ├─22893 /usr/sbin/apache2 -k start
              └─22894 /usr/sbin/apache2 -k start

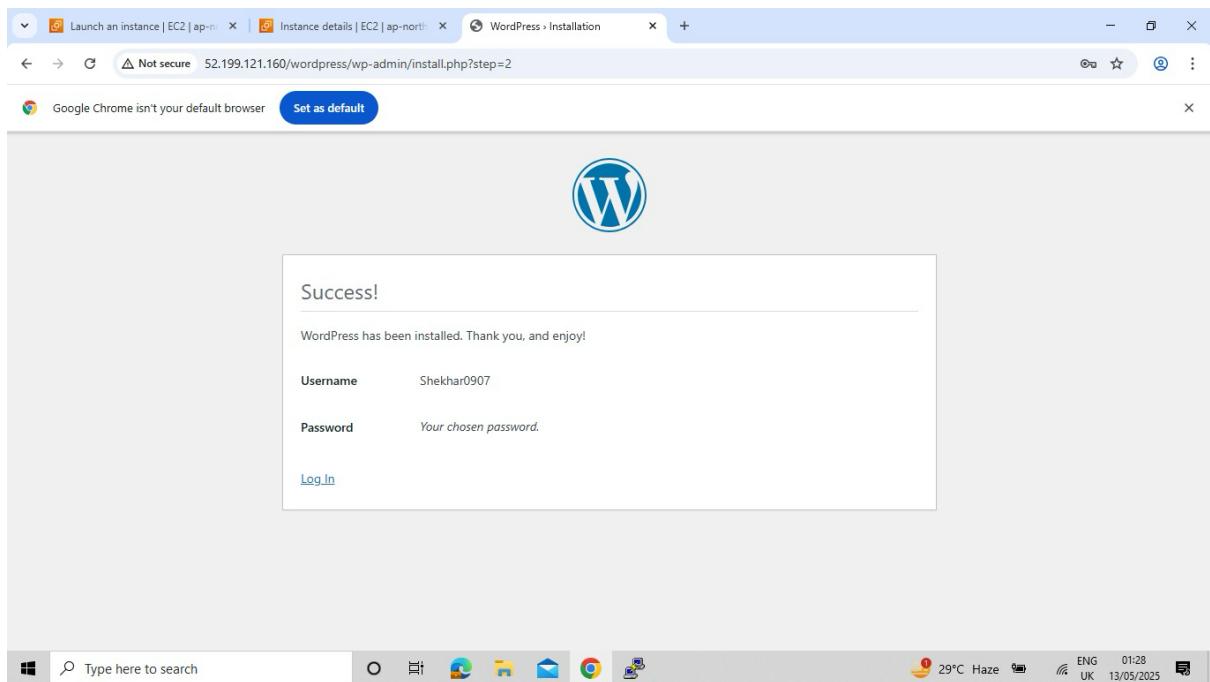
May 12 19:40:39 ip-172-31-43-90 systemd[1]: Starting apache2.service - The Apache HTTP Server...
May 12 19:40:39 ip-172-31-43-90 systemd[1]: Started apache2.service - The Apache HTTP Server.
root@ip-172-31-43-90:/tmp# cd ..
root@ip-172-31-43-90:# cd /var/www/html/wordpress/
root@ip-172-31-43-90:/var/www/html/wordpress# vim wp-config.php
root@ip-172-31-43-90:/var/www/html/wordpress#
```

After you've done that click Run the installation.

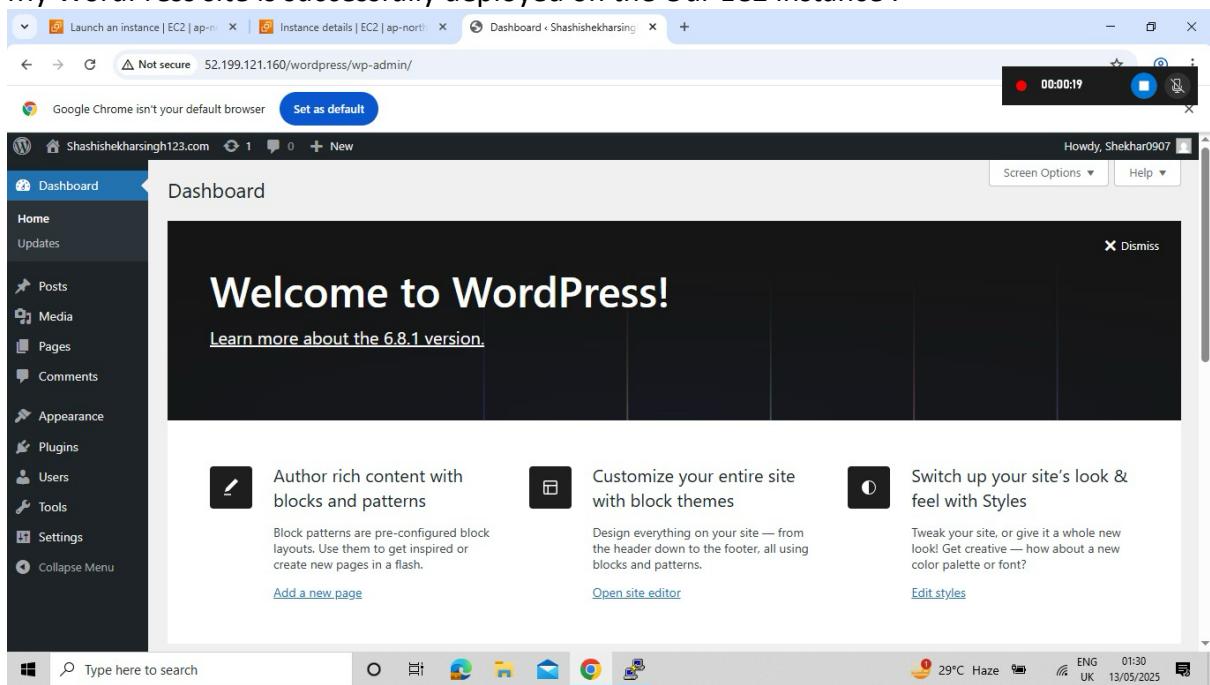
Run the installation

Windows taskbar: Type here to search, File Explorer, File History, Mail, Photos, Google Chrome, Task View, Taskbar settings, 29°C Haze, ENG UK 01:25 13/05/2025





My WordPress site is successfully deployed on the Our EC2 instance .



## Microservices:

Make 2 EC2 instances ,separate for MySQL and WordPress.

The screenshot shows the AWS Management Console with the EC2 Instances page open. The left sidebar shows navigation options like Dashboard, EC2 Global View, Instances, and Images. The main area displays a table of instances:

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability
<input type="checkbox"/>	MySQL	i-026ebe8a1563c5ef9	Running	t2.micro	2/2 checks passed	<a href="#">View alarms</a>	ap-northeast-1
<input type="checkbox"/>	WordPress	i-0ac888d426470e398	Running	t2.micro	2/2 checks passed	<a href="#">View alarms</a>	ap-northeast-1

Below the table, a search bar says "Find Instance by attribute or tag (case-sensitive)" and a button says "Clear filters". The status bar at the bottom indicates "Last updated less than a minute ago".

Open Putty as before and authenticate using ppk file

The screenshot shows the AWS Management Console with the Instance Details page for an Ubuntu instance. The left sidebar shows navigation options like CloudShell and Feedback. The main area displays the instance's configuration:

- Hostname type:** IP name: ip-172-31-45-161.ap-northeast-1.compute.internal
- Answer private resource DNS name:** IPv4 (A)
- Private IP DNS name (IPv4 only):** ip-172-31-45-161.ap-northeast-1.compute.internal
- Instance type:** t2.micro
- VPC ID:** vpc-01f1fb207b999bbdc
- Private IPv4 addresses:** 172.31.45.161
- Public IPv4 DNS:** ec2-13-115-123-98.ap-northeast-1.compute.amazonaws.com
- Elastic IP addresses:** -

The status bar at the bottom indicates "Last updated less than a minute ago".

Now install, update MySQL and WordPress using previous commands as used in monolithic. Just change the bind address to 0.0.0.0 and restart.

The screenshot shows a Windows desktop environment with several open windows:

- CloudShell**: A terminal window showing the command `apt update` being run on an Ubuntu instance. The output includes package metadata and dependency resolution.
- Browsers**: Multiple tabs in a browser window are titled "Launch an instance | EC2 | ap-northeast-1" and "Instances | EC2 | ap-northeast-1".
- Lambda Console**: An "Instance details" page for an EC2 instance named "Shekhar%400909". It displays the instance's configuration, including its private IP (172.31.45.161), public DNS (ec2-13-115-123-98.ap-northeast-1.compute.amazonaws.com), and VPC ID (vpc-01f1fb207b999bbdc).
- System Tray**: Shows the date (14/05/2025), time (19:32), and weather (37°C Clear) information.

After completing installation and updating. Open browser and add the public IPv4 Address of the instances. Now setup your web site as done in previous slides.