

Task:- Deploy application in monolithic and microservices architecture

Here's how I completed the task of deploying WordPress in both monolithic and microservices architectures on AWS EC2 instances.

1. Monolithic Architecture:-

In the monolithic setup, WordPress and MySQL will run on the same EC2 instance.

Steps:

1. Launch an EC2 instance:

- Go to the AWS EC2 Dashboard, choose an Ubuntu AMI, select the 't2.micro' instance type, and name it something like 'monolithic-wordpress'.
- Create a security group to allow HTTP (port 80) for web access, HTTPS (port 443), MySQL (port 3306) from the instance itself, and SSH (port 22) from your IP but as of now it is 0.0.0.0 for Demo purpose.

EC2 > Security Groups > sg-0e984419641062d5 - launch-wizard-1 > Edit inbound rules

Edit inbound rules [Info](#)

Inbound rules control the incoming traffic that's allowed to reach the instance.

Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info	Description - optional Info	
sgr-01e6b5405d0e5d48c	SSH	TCP	22	Custom	Q	Delete
sgr-0826304fcfb3ae9a3	HTTPS	TCP	443	Custom	Q	Delete
sgr-0b5a860cb891e7d28	HTTP	TCP	80	Custom	Q	Delete

[Add rule](#)

[Cancel](#) [Preview changes](#) [Save rules](#)

⚠ Rules with source of 0.0.0.0/0 or :::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

2. Install Required Software:

- SSH into the instance, update packages, and install Apache for the web server, MySQL for the database and PHP.

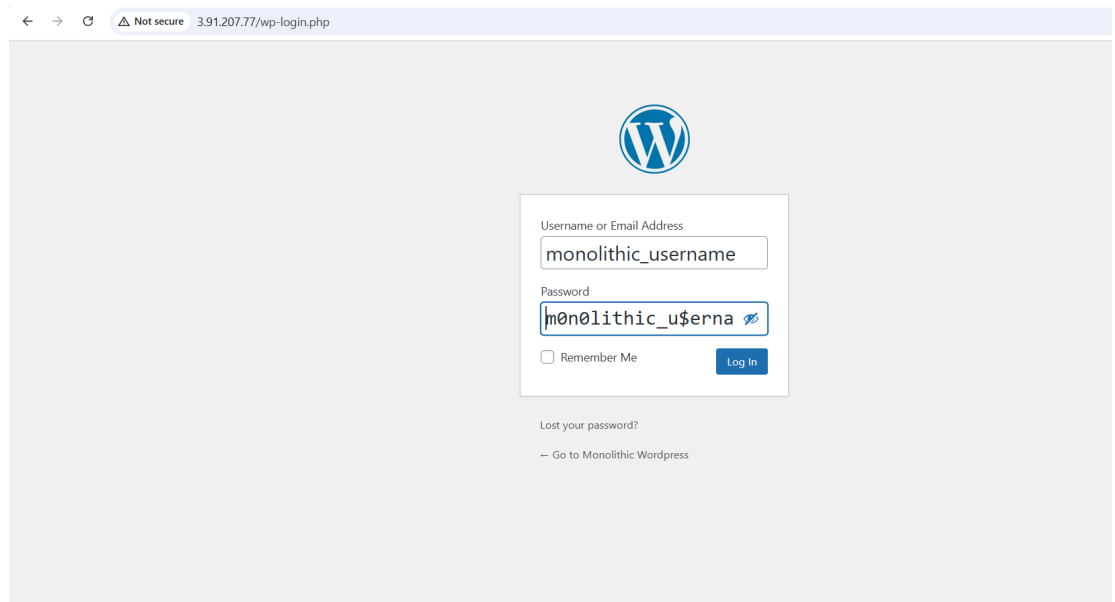
3. Set Up MySQL:

- Start MySQL, create a database named 'wordpress', and set up a user with access to this database.

4. Install WordPress:

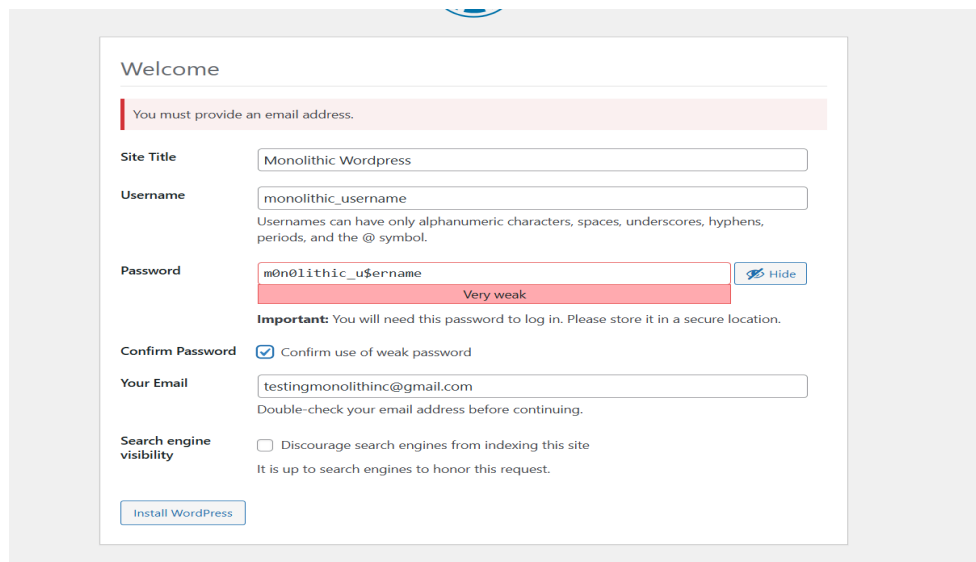
- Download WordPress, Move it to the web directory ('/var/www/html/wordpress') And configure it to connect to MySQL (using 'localhost' as the database host).

Login Wordpress-



A screenshot of a web browser showing the WordPress login page. The browser's address bar displays '3.91.207.77/wp-login.php' with a 'Not secure' warning. The page features the WordPress logo at the top center. Below it is a login form with two input fields: 'Username or Email Address' containing 'monolithic_username' and 'Password' containing 'm0n0lithic_u\$erna'. There is a 'Remember Me' checkbox and a 'Log In' button. Below the form, there is a link for 'Lost your password?' and a link to 'Go to Monolithic Wordpress'.

Install Wordpress-



A screenshot of the WordPress installation 'Welcome' screen. At the top, it says 'Welcome'. Below this is a red error message: 'You must provide an email address.' The form contains several fields: 'Site Title' with 'Monolithic Wordpress', 'Username' with 'monolithic_username', 'Password' with 'm0n0lithic_u\$erna' (labeled 'Very weak'), 'Confirm Password' with a checked box for 'Confirm use of weak password', and 'Your Email' with 'testingmonolithinc@gmail.com'. There is also a 'Search engine visibility' section with a checkbox for 'Discourage search engines from indexing this site'. At the bottom is an 'Install WordPress' button.

5. Finish Setup and Create Welcome page:

- Access 'http://<Instance_Public_IP>/wordpress' in a browser to complete the wordpress setup, then log in to the dashboard, create a Welcome page, and set it as the homepage.

The commands used are as follows-

```
ubuntu@ip-172-31-86-151:/var/www/html$ history
 1  hostname
 2  sudo apt-get update
 3  sudo apt-get install apache2
 4  sudo apt-get install mysql-server
 5  sudo apt-get install php libapache2-mb-php php-mysql
 6  sudo apt-get install php libapache2-mod-php php-mysql
 7  sudo mysql_secure_installation
 8  sudo mysql -u root -p
 9  history
10  cd /var/www/html
11  sudo wget https://wordpress.org/latest.tar.gz
12  ls
13  sudo tar -xvzf latest.tar.gz
14  ls
15  cd wordpress/
16  ls
17  cd ..
18  ls
19  sudo mv wordpress/* .
20  ls
21  sudo rm -rf wordpress latest.tar.gz
22  ls
23  sudo chown -R www-data:www-data /var/www/html
24  sudo chmod -R 755 /var/www/html
25  clear
26  ls
27  sudo cp wp-config-sample.php wp-config.php
28  ls
29  sudo nano wp-config.php
30  LS
31  ls
32  history
33  cd /var/www/html/
34  ls
35  sudo nano wp-config.php
36  cat wp-config.php
```

```

ubuntu@ip-172-31-86-151:/var/www/html$ history
37 sudo systemctl restart apache2
38 ls
39 sudo systemctl restart apache2
40 sudo nano /etc/apache2/sites-available/000-default.conf
41 ls
42 sudo nano /etc/apache2/apache2.conf
43 cat /etc/apache2/apache2.conf
44 clear
45 cat /etc/apache2/apache2.conf
46 ls
47 cat index.html
48 ls
49 sudo rm /var/www/html/index.html
50 sudo systemctl restart apache2
51 sudo systemctl start mysql
52 sudo systemctl status mysql
53 sudo tail -f /var/log/mysql/error.log
54 mysql -u wordpressuser -p
55 sudo nano /var/www/html/wp-config.php
56 sudo systemctl status mysql
57 sudo nano /var/www/html/testdb.php
58 sudo nano /var/www/html/testdb.php
59 cat testdb.php
60 sudo systemctl restart apache2
61 cat wp-config.php
62 clear
63 cat wp-config.php
64 sudo apt-get install php-mysql
65 sudo systemctl restart apache2
66 sudo nano wp-config.php
67 sudo apt-get install php-mysql
68 sudo systemctl restart apache2
69 mysql -u root -p
70 sudo mysql -u root -p
71 sudo nano wp-config.php
72 cat wp-config.php
73 mysql -u wordpressuser -p
74 sudo systemctl restart apache2

```

The command execute like this-

```

mysql> CREATE DATABASE wordpress;
Query OK, 1 row affected (0.01 sec)

mysql> CREATE USER 'wordpressuser'@'localhost' IDENTIFIED BY 'password';
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
mysql> CREATE USER 'wordpressuser'@'localhost' IDENTIFIED BY 'StrongP@ssw0rd!';
Query OK, 0 rows affected (0.01 sec)

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

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

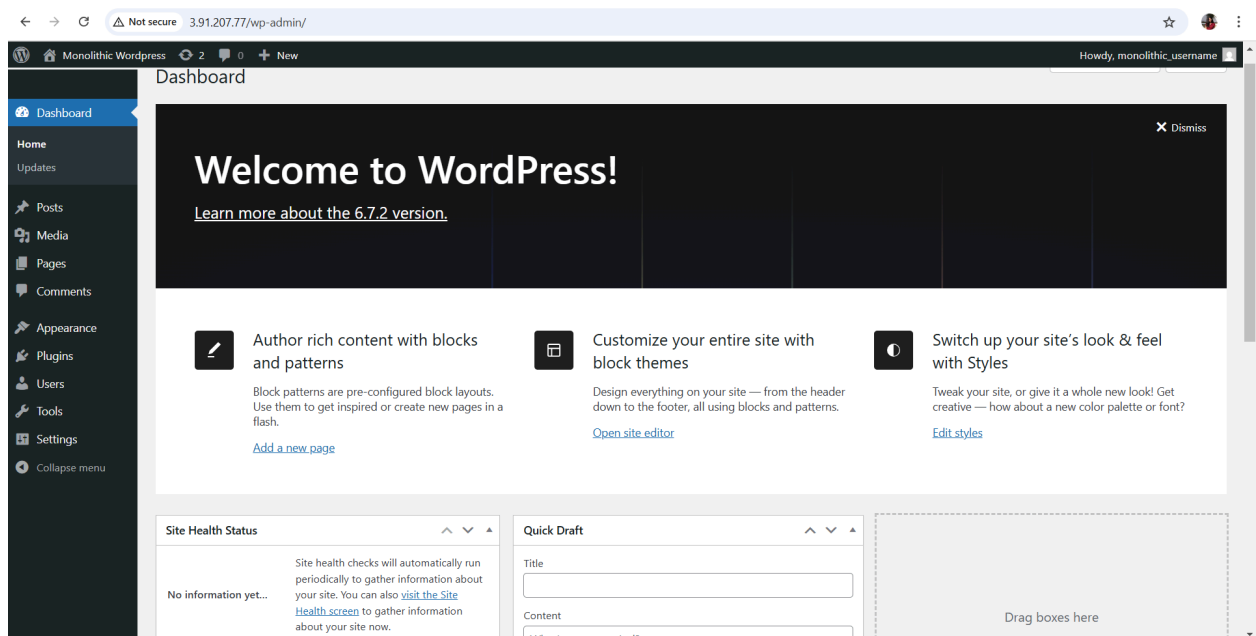
mysql> EXIT;
Bye
ubuntu@ip-172-31-86-151:~$ history
1
2 hostname
3 sudo apt-get update
4 sudo apt-get install apache2
5 sudo apt-get install mysql-server
6 sudo apt-get install php libapache2-mod-php php-mysql
7 sudo apt-get install php libapache2-mod-php php-mysql
8 sudo mysql_secure_installation
9 sudo mysql -u root -p
10 history
ubuntu@ip-172-31-86-151:~$

```

i-034578ab1ca5f1107 (monolithic)

PublicIPs: 3.91.207.77 PrivateIPs: 172.31.86.151

It appears like this



2. Microservices Architecture

For the microservices setup, WordPress and MySQL will run on separate EC2 instances.

Steps:

1. Launch EC2 Instances:

-Start two instances:

- One for MySQL with a security group that allows inbound MySQL connections (port 3306) from the WordPress instance's private IP.
- One for WordPress with a security group that allows HTTP(port 80) for public web access and SSH(port 22) from your IP.

2. Install MySQL on the MySQL instance:

-SSH into the MySQL instance, install MySQL, and configure it to accept remote connections. Create a 'WordPress' database and a user for the WordPress instance to connect.

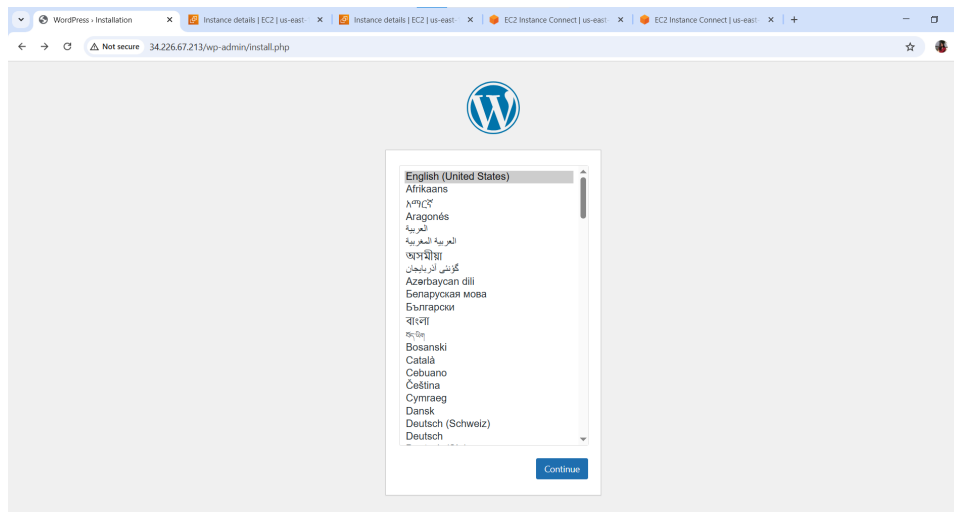
3. Install WordPress on the WordPress Instance:

-SSH into the WordPress instance, install Apache and PHP, Download WordPress, and configure it to connect to the MySQL instance by using the MySQL instance's private IP.

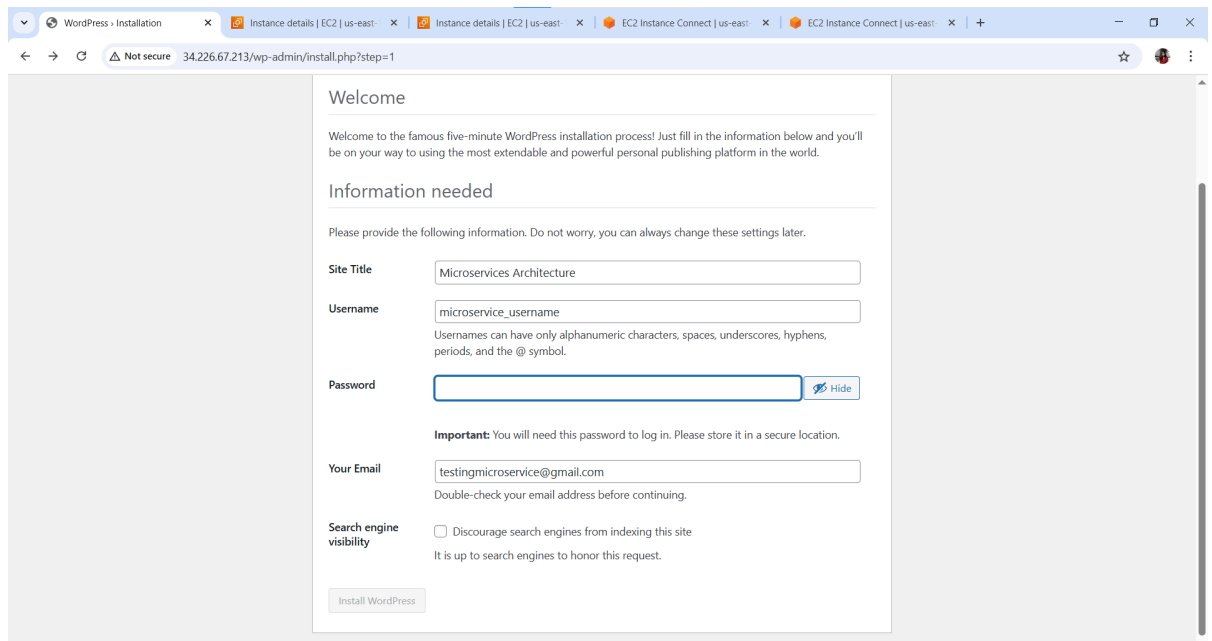
4. Finish setup and Create Welcome Page:

-Go to 'http://<WordPress_Instance_public_IP>/wordpress' in a browser, complete the WordPress setup, create a Welcome page, and set it as the homepage.

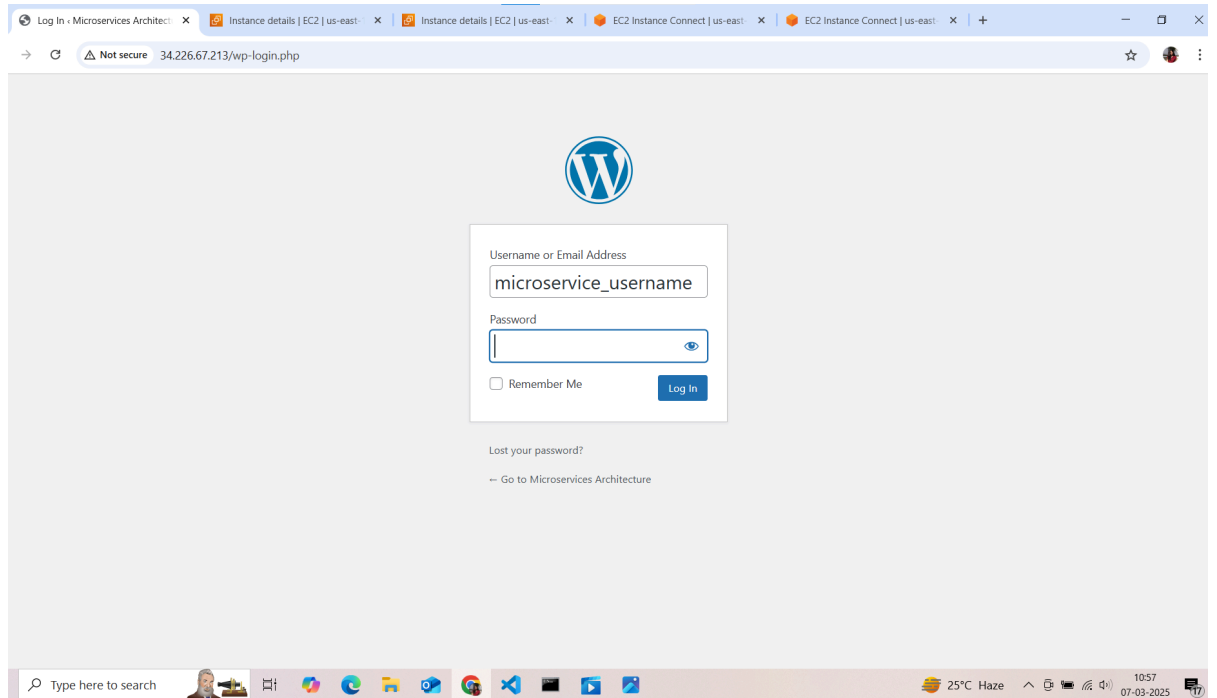
WordPress Installations:



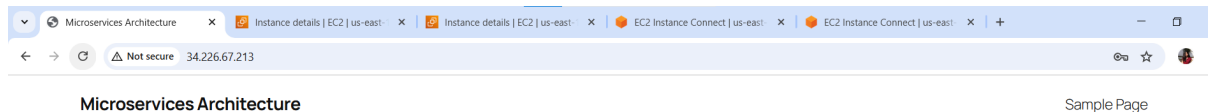
Wordpress Signup page :



Wordpress Login page :



Wordpress Home Page:



The commands used in WordPress are as follows:-

```
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Fri Mar  7 05:12:38 2025 from 18.206.107.28
ubuntu@ip-172-31-84-152:~$ history
 1  cd /var/www/html
 2  cd /var/www/html/
 3  hostname
 4  ls
 5  sudo apt-get update
 6  sudo apt-get install apache2
 7  sudo apt-get install php libapache2-mod-php php-mysql
 8  cd /var/www/html
 9  sudo wget https://wordpress.org/latest.tar.gz
10  cd /var/www/html
11  sudo wget https://wordpress.org/latest.tar.gz
12  sudo tar -xvzf latest.tar.gz
13  sudo mv wordpress/* .
14  sudo rm -rf wordpress latest.tar.gz
15  sudo chown -R www-data:www-data /var/www/html
16  sudo chmod -R 755 /var/www/html
17  sudo cp wp-config-sample.php wp-config.php
18  sudo nano wp-config.php
19  cat wp-config.php
20  sudo systemctl restart apache2~
21  sudo systemctl restart apache2
22  history
ubuntu@ip-172-31-84-152:~$
```

The comments used in MySQL are as follows:-

```
/* That's all, stop editing! Happy publishing. */

/** Absolute path to the WordPress directory. */
if ( ! defined( 'ABSPATH' ) ) {
    define( 'ABSPATH', __DIR__ . '/' );
}

/** Sets up WordPress vars and included files. */
require_once ABSPATH . 'wp-settings.php';
ubuntu@ip-172-31-26-138:/var/www/html$ sudo systemctl restart
ubuntu@ip-172-31-26-138:/var/www/html$ history
 1  sudo apt-get update
 2  sudo apt-get install mysql-server
 3  Secure MySQL Installation:
 4  sudo mysql_secure_installation
 5  sudo mysql -u root -p
 6  sudo nano /etc/mysql/mysql.conf.d/mysqld.cnf
 7  cat /etc/mysql/mysql.conf.d/mysqld.cnf
 8  sudo systemctl restart mysql
 9  exit;
10  sudo apt-get update
11  sudo apt-get install apache2
12  sudo apt-get install php libapache2-mod-php php-mysql
```