

Report submitted by : **Muneeb Ahmed Bali**

TASK 1:

For monolith : 1 EC2 instance, deploy wordpress and MYSQL on the same instances

Creation AWS VPC Security Group

1. Ec2Securitygroup:

The screenshot displays the AWS Management Console interface for a security group. At the top, a green notification bar states: "Security group (sg-06f90edbdca8a793c | ec2securitygroup) was created successfully". Below this, the breadcrumb navigation shows "EC2 > Security Groups > sg-06f90edbdca8a793c - ec2securitygroup". The main heading is "sg-06f90edbdca8a793c - ec2securitygroup" with an "Actions" dropdown menu. The "Details" tab is active, showing a table of properties:

Details			
Security group name	Security group ID	Description	VPC ID
ec2securitygroup	sg-06f90edbdca8a793c	v	vpc-0f5306da9aa1c1c13
Owner	Inbound rules count	Outbound rules count	
832728685443	2 Permission entries	1 Permission entry	

Below the details, there are tabs for "Inbound rules", "Outbound rules", and "Tags". The "Inbound rules" tab is selected, showing "Inbound rules (2)". It includes a search bar "Filter security group rules", a refresh button, and buttons for "Manage tags" and "Edit inbound rules". A table of rules is partially visible at the bottom:

<input type="checkbox"/>	Name	Security group rule...	IP version	Type	Protocol	Port range
--------------------------	------	------------------------	------------	------	----------	------------

2. RDS security group

✔ Security group (sg-0bd84c6f4a50b5ca4 | rdssecuritygroup) was created successfully

▶ Details

EC2 > Security Groups > sg-0bd84c6f4a50b5ca4 - rdssecuritygroup

sg-0bd84c6f4a50b5ca4 - rdssecuritygroup

Actions ▼

Details

Security group name rdssecuritygroup	Security group ID sg-0bd84c6f4a50b5ca4	Description rdssecuritygroup	VPC ID vpc-0f5306da9aa1c1c13
Owner 832728685443	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry	

Inbound rules

Outbound rules

Tags

Inbound rules (1/1)

Filter security group rules

Manage tags

Edit inbound rules

< 1 >

☯

<input checked="" type="checkbox"/>	Name	Security group rule...	IP version	Type	Protocol	Port range
-------------------------------------	------	------------------------	------------	------	----------	------------

Creation of AWS RDS Database

RDS > Databases > wdatabase

wdatabase

Modify

Actions ▼

Summary

DB identifier wdatabase	CPU 3.79%	Status ✔ Available	Class db.t2.micro
Role Instance	Current activity 0 Connections	Engine MySQL Community	Region & AZ us-east-1f

Connectivity & security

Monitoring

Logs & events

Configuration

Maintenance & backups

Tags

Connectivity & security

Endpoint & port Endpoint wdatabase.cjjuouuvertf.us-east-1.rds.amazonaws.com Port 3306	Networking Availability Zone us-east-1f VPC vpc-0f5306da9aa1c1c13	Security VPC security groups rdssecuritygroup (sg-0bd84c6f4a50b5ca4) ✔ Active Publicly accessible
---	---	---

Creation of AWS EC2 Instance –

The screenshot displays the AWS Management Console interface for an EC2 instance. The breadcrumb navigation shows 'EC2 > Instances > i-031b08c3004ed04e4'. The instance summary for 'i-031b08c3004ed04e4 (wordpress12)' is shown, updated less than a minute ago. The instance is in a 'Running' state. Key details include: Instance ID (i-031b08c3004ed04e4), Public IPv4 address (18.215.241.216), Private IPv4 address (172.31.47.231), Public IPv4 DNS (ec2-18-215-241-216.compute-1.amazonaws.com), Instance type (t2.micro), VPC ID (vpc-0f5306da9aa1c1c13), and Subnet ID (subnet-0c163c59841f7352a). The instance is using the 'Required' IAM role and 'Required' IMDSv2. The console also shows tabs for Details, Security, Networking, Storage, Status checks, Monitoring, and Tags. The 'Details' tab is selected, showing a table with columns for Instance ID, Public IPv4 address, Private IPv4 addresses, Public IPv4 DNS, Elastic IP addresses, AWS Compute Optimizer finding, and Auto Scaling Group name.

Instance ID	Public IPv4 address	Private IPv4 addresses	Public IPv4 DNS	Elastic IP addresses	AWS Compute Optimizer finding	Auto Scaling Group name
i-031b08c3004ed04e4 (wordpress12)	18.215.241.216 open address	172.31.47.231	ec2-18-215-241-216.compute-1.amazonaws.com open address	–	Opt-in to AWS Compute Optimizer for recommendations. Learn more	–

Installing php, mysql, wordpress –

Configure wordpress with AWS RDS Database

Step 1: Prepare the LAMP server

Prerequisites

- This tutorial assumes that you have already launched a new instance using Amazon Linux 2023, with a public DNS name that is reachable from the internet. For more information, see [Step 1: Launch an instance](#). You must also have configured your security group to allow SSH (port 22), HTTP (port 80), and HTTPS (port 443) connections. For more information about these prerequisites, see [Authorize inbound traffic for your Linux instances](#).
- The following procedure installs the latest PHP version available on Amazon Linux 2023, currently 8.1. If you plan to use PHP applications other than those described in this tutorial, you should check their compatibility with 8.1.

To prepare the LAMP server

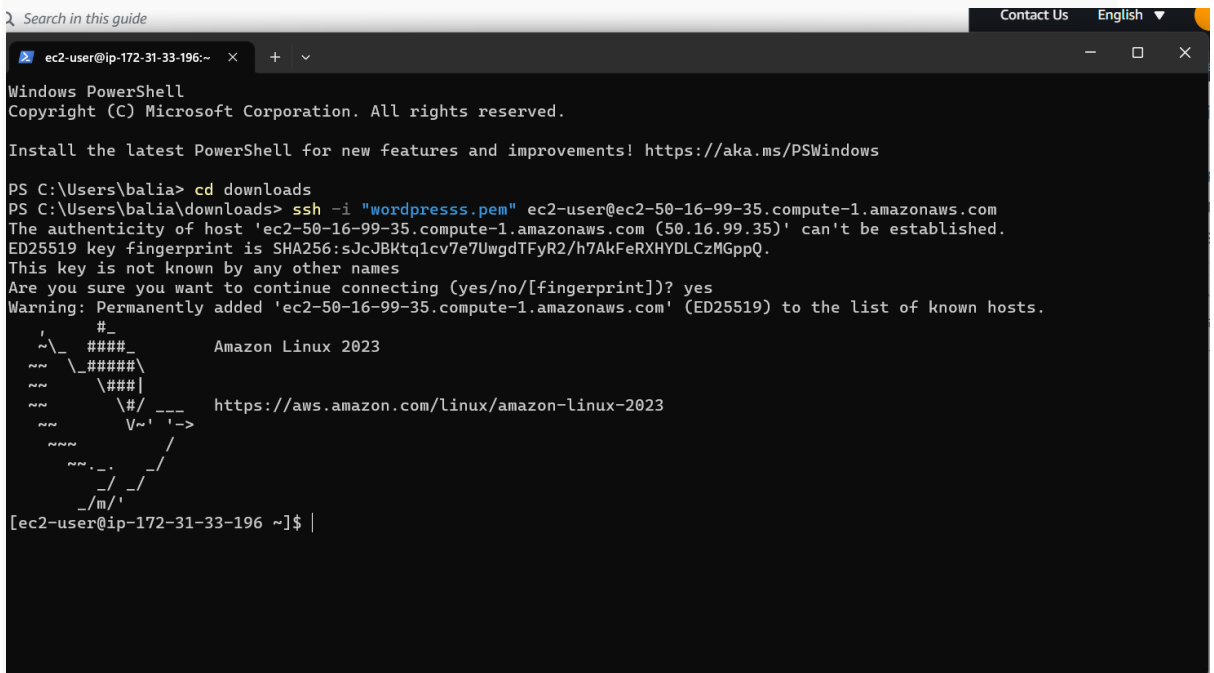
1. [Connect to your instance](#).

2. To ensure that all of your software packages are up to date, perform a quick software update on your instance. This process might take a few minutes, but it is important to make sure that you have the latest security updates and bug fixes. The `-y` option installs the updates without asking for confirmation. If you would like to examine the updates before installing, you can omit this option.

```
[ec2-user ~]$ sudo dnf update -y
```

3. Install the latest versions of Apache web server and PHP packages for Amazon Linux 2023.

```
[ec2-user ~]$ sudo dnf install -y httpd wget php-fpm php-mysqli php-json php php-devel
```



The screenshot shows a Windows PowerShell terminal window. At the top, there's a search bar and a 'Contact Us' link. The terminal title is 'ec2-user@ip-172-31-33-196:~'. The content shows the user running 'cd downloads' and then 'ssh -i "wordpress.pem" ec2-user@ec2-50-16-99-35.compute-1.amazonaws.com'. It displays the SSH warning about the host's authenticity, the user confirming 'yes', and the warning being added to the known hosts list. Below this, there's a large ASCII art logo for 'Amazon Linux 2023' with the URL 'https://aws.amazon.com/linux/amazon-linux-2023'.

4. Install the MariaDB software packages. Use the `dnf install` command to install multiple software packages and all related dependencies at the same time.

```
[ec2-user ~]$ sudo dnf install mariadb105-server
```

You can view the current versions of these packages using the following command:

5. Start the Apache web server.

```
[ec2-user ~]$ sudo systemctl start httpd
```

6. Use the **systemctl** command to configure the Apache web server to start at each system boot.

```
[ec2-user ~]$ sudo systemctl enable httpd
```

You can verify that **httpd** is on by running the following command:

```
[ec2-user ~]$ sudo systemctl is-enabled httpd
```

7. Add a security rule to allow inbound HTTP (port 80) connections to your instance if you have not already done so. By default, a **launch-wizard-*n*** security group was created for your instance during launch. If you did not add additional security group rules, this group contains only a single rule to allow SSH connections.
 - a. Open the Amazon EC2 console at <https://console.aws.amazon.com/ec2/>.
 - b. In the left navigator, choose **Instances**, and select your instance.
 - c. On the **Security** tab, view the inbound rules. You should see the following rule:

d. Port	range	Protocol	Source
22		tcp	0.0.0.0/0

Warning

Using **0.0.0.0/0** allows all IPv4 addresses to access your instance using SSH. This is acceptable for a short time in a test environment, but it's unsafe for production environments. In production, you authorize only a specific IP address or range of addresses to access your instance.

- e. If there is no inbound rule to allow HTTP (port 80) connections, you must add the rule now. Choose the link for the security group. Using the procedures in [Add rules to a security group](#), add a new inbound security rule with the following values:
 - **Type:** HTTP
 - **Protocol:** TCP
 - **Port Range:** 80
 - **Source:** Custom
8. Test your web server. In a web browser, type the public DNS address (or the public IP address) of your instance. If there is no content in `/var/www/html`, you should see the Apache test page, which will display the message **"It works!"**.

You can get the public DNS for your instance using the Amazon EC2 console (check the **Public IPv4 DNS** column; if this column is hidden, choose **Preferences** (the gear-shaped icon) and toggle on **Public IPv4 DNS**).

Verify that the security group for the instance contains a rule to allow HTTP traffic on port 80. For more information, see [Add rules to a security group](#).

Important

If you are not using Amazon Linux, you might also need to configure the firewall on your instance to allow these connections. For more information about how to configure the firewall, see the documentation for your specific distribution.

Apache **httpd** serves files that are kept in a directory called the Apache document root. The Amazon Linux Apache document root is `/var/www/html`, which by default is owned by root.

To allow the `ec2-user` account to manipulate files in this directory, you must modify the ownership and permissions of the directory. There are many ways to accomplish this task. In this tutorial, you add `ec2-user` to the `apache` group to give the `apache` group ownership of the `/var/www` directory and assign write permissions to the group.

To set file permissions

1. Add your user (in this case, `ec2-user`) to the `apache` group.

```
[ec2-user ~]$ sudo usermod -a -G apache ec2-user
```

2. Log out and then log back in again to pick up the new group, and then verify your membership.
 - a. Log out (use the **exit** command or close the terminal window):

```
[ec2-user ~]$ exit
```

- b. To verify your membership in the `apache` group, reconnect to your instance, and then run the following command:

```
c. [ec2-user ~]$ groups
```

```
ec2-user adm wheel apache systemd-journal
```

3. Change the group ownership of `/var/www` and its contents to the `apache` group.

```
[ec2-user ~]$ sudo chown -R ec2-user:apache /var/www
```

```
ec2-user@ip-172-31-47-231/v x + v
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
[ec2-user@ip-172-31-47-231 html]$ ls
latest.tar.gz  phpinfo.php  wordpress
[ec2-user@ip-172-31-47-231 html]$ mysql -h wdatabase.ccjuoouvertf.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
ERROR 1045 (28000): Access denied for user 'admin'@'172.31.47.231' (using password: YES)
[ec2-user@ip-172-31-47-231 html]$ mysql -h wdatabase.ccjuoouvertf.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
ERROR 1045 (28000): Access denied for user 'admin'@'172.31.47.231' (using password: YES)
[ec2-user@ip-172-31-47-231 html]$ mysql -h wdatabase.ccjuoouvertf.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 5.7.37 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> |
```

4. To add group write permissions and to set the group ID on future subdirectories, change the directory permissions of /var/www and its subdirectories.

```
[ec2-user ~]$ sudo chmod 2775 /var/www && find /var/www -type d -exec sudo chmod 2775 {} \;
```

5. To add group write permissions, recursively change the file permissions of /var/www and its subdirectories:

```
[ec2-user ~]$ find /var/www -type f -exec sudo chmod 0664 {} \;
```

Now, ec2-user (and any future members of the apache group) can add, delete, and edit files in the Apache document root, enabling you to add content, such as a static website or a PHP application.

To secure your web server (Optional)

A web server running the HTTP protocol provides no transport security for the data that it sends or receives. When you connect to an HTTP server using a web browser, the URLs that you visit, the content of webpages that you receive, and the contents (including passwords) of any HTML forms that you submit are all visible to eavesdroppers anywhere along the network pathway. The best practice for securing your web server is to install support for HTTPS (HTTP Secure), which protects your data with SSL/TLS encryption.

For information about enabling HTTPS on your server, see [Configure SSL/TLS on Amazon Linux 2](#).

Step 2: Test your LAMP server

If your server is installed and running, and your file permissions are set correctly, your ec2-user account should be able to create a PHP file in the `/var/www/html` directory that is available from the internet.

To test your LAMP server

1. Create a PHP file in the Apache document root.

```
[ec2-user ~]$ echo "<?php phpinfo(); ?>" >  
/var/www/html/phpinfo.php
```

If you get a "Permission denied" error when trying to run this command, try logging out and logging back in again to pick up the proper group permissions that you configured in [To set file permissions](#).

2. In a web browser, type the URL of the file that you just created. This URL is the public DNS address of your instance followed by a forward slash and the file name. For example:

```
http://my.public.dns.amazonaws.com/phpinfo.php
```




```
ec2-user@ip-172-31-47-231:/v  +  v
define( 'NONCE_SALT', 'tJ1xX8p/$+uXFL/!EqWJbT*B|I[&aHvq -?ywc+)SQ^aBNqV9,m(T?[/@_jr>+1J' );
/**@-*/
/**
 * WordPress database table prefix.
 *
 * You can have multiple installations in one database if you give each
 * a unique prefix. Only numbers, letters, and underscores please!
 */
$table_prefix = 'wp_';
/**
 * For developers: WordPress debugging mode.
 *
 * Change this to true to enable the display of notices during development.
 * It is strongly recommended that plugin and theme developers use WP_DEBUG
 * in their development environments.
 *
 * For information on other constants that can be used for debugging,
 * visit the documentation.
 *
 * @link https://wordpress.org/documentation/article/debugging-in-wordpress/
 */
define( 'WP_DEBUG', false );
/* Add any custom values between this line and the "stop editing" line. */

/* 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';
```

You should see the PHP information page:

PHP Version 8.1.7




System	Linux ip-172-31-16-77.ec2.internal 5.15.57-28.127.amzn2022.aarch64 #1 SMP Thu Aug 4 17:06:57 UTC 2022 aarch64
Build Date	Jun 7 2022 18:21:38
Build System	Linux
Build Provider	Amazon Linux
Compiler	gcc (GCC) 11.3.1 20220421 (Red Hat 11.3.1-2)
Architecture	aarch64
Server API	FPM/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc
Loaded Configuration File	/etc/php.ini
Scan this dir for additional .ini files	/etc/php.d
Additional .ini files parsed	/etc/php.d/10-opcache.ini, /etc/php.d/20-bz2.ini, /etc/php.d/20-calendar.ini, /etc/php.d/20-ctype.ini, /etc/php.d/20-curl.ini, /etc/php.d/20-dom.ini, /etc/php.d/20-exif.ini, /etc/php.d/20-fileinfo.ini, /etc/php.d/20-ftp.ini, /etc/php.d/20-gd.ini, /etc/php.d/20-gettext.ini, /etc/php.d/20-iconv.ini, /etc/php.d/20-mbstring.ini, /etc/php.d/20-mysqlnd.ini, /etc/php.d/20-pdo.ini, /etc/php.d/20-phar.ini, /etc/php.d/20-simplexml.ini, /etc/php.d/20-sockets.ini, /etc/php.d/20-sqlite3.ini, /etc/php.d/20-tokenizer.ini, /etc/php.d/20-xml.ini, /etc/php.d/20-xmlwriter.ini, /etc/php.d/20-xsl.ini, /etc/php.d/30-mysqli.ini, /etc/php.d/30-pdo_mysql.ini, /etc/php.d/30-pdo_sqlite.ini, /etc/php.d/30-xmlreader.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	provided by mbstring
IPv6 Support	enabled
DTrace Support	available, disabled
Registered PHP Streams	https, ftps, compress.zlib, php, file, glob, data, http, ftp, compress.bzip2, 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, bzip2.*, convert.iconv.*

This program makes use of the Zend Scripting Language Engine:

Zend Engine v4.1.7, Copyright (c) Zend Technologies

with Zend OPcache v8.1.7, Copyright (c), by Zend Technologies



If you do not see this page, verify that the `/var/www/html/phpinfo.php` file was created properly in the previous step. You can also verify that all of the required packages were installed with the following command.

```
[ec2-user ~]$ sudo dnf list installed httpd mariadb-server php-mysqlnd
```

If any of the required packages are not listed in your output, install them with the `sudo yum install package` command.

3. Delete the `phpinfo.php` file. Although this can be useful information, it should not be broadcast to the internet for security reasons.

```
[ec2-user ~]$ rm /var/www/html/phpinfo.php
```

You should now have a fully functional LAMP web server. If you add content to the Apache document root at `/var/www/html`, you should be able to view that content at the public DNS address for your instance.

Step 3: Secure the database server

The default installation of the MariaDB server has several features that are great for testing and development, but they should be disabled or removed for production servers. The **mysql_secure_installation** command walks you through the process of setting a root password and removing the insecure features from your installation. Even if you are not planning on using the MariaDB server, we recommend performing this procedure.

To secure the MariaDB server

1. Start the MariaDB server.

```
[ec2-user ~]$ sudo systemctl start mariadb
```

2. Run **mysql_secure_installation**.

```
[ec2-user ~]$ sudo mysql_secure_installation
```

- a. When prompted, type a password for the root account.
 - i. Type the current root password. By default, the root account does not have a password set. Press Enter.
 - ii. Type **y** to set a password, and type a secure password twice. For more information about creating a secure password, see <https://identitysafe.norton.com/password-generator/>. Make sure to store this password in a safe place.

Setting a root password for MariaDB is only the most basic measure for securing your database. When you build or install a database-driven application, you typically create a database service user for that application and avoid using the root account for anything but database administration.
 - b. Type **y** to remove the anonymous user accounts.
 - c. Type **y** to disable the remote root login.
 - d. Type **y** to remove the test database.
 - e. Type **y** to reload the privilege tables and save your changes.
3. (Optional) If you do not plan to use the MariaDB server right away, stop it. You can restart it when you need it again.

```
[ec2-user ~]$ sudo systemctl stop mariadb
```

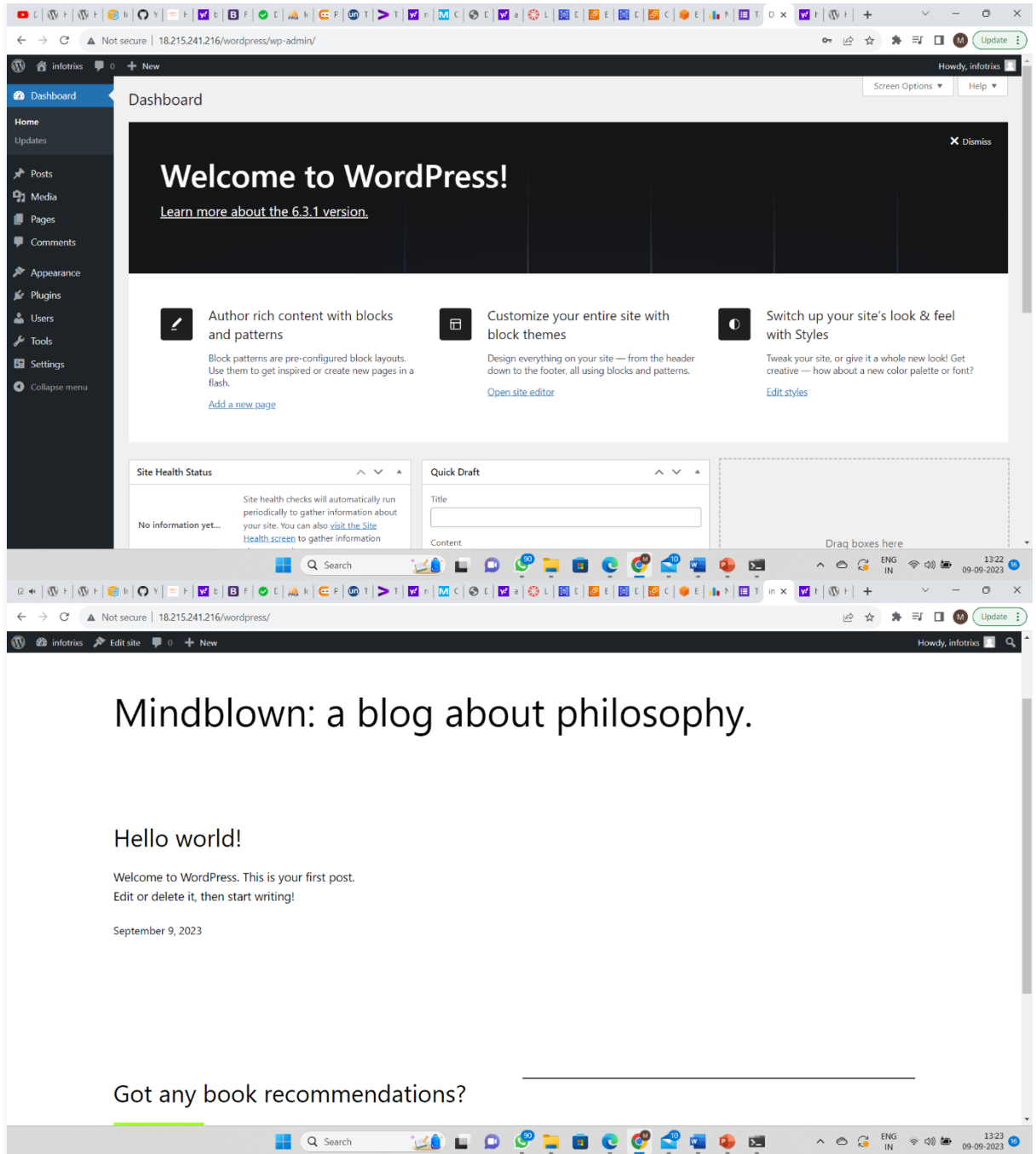
4. (Optional) If you want the MariaDB server to start at every boot, type the following command.

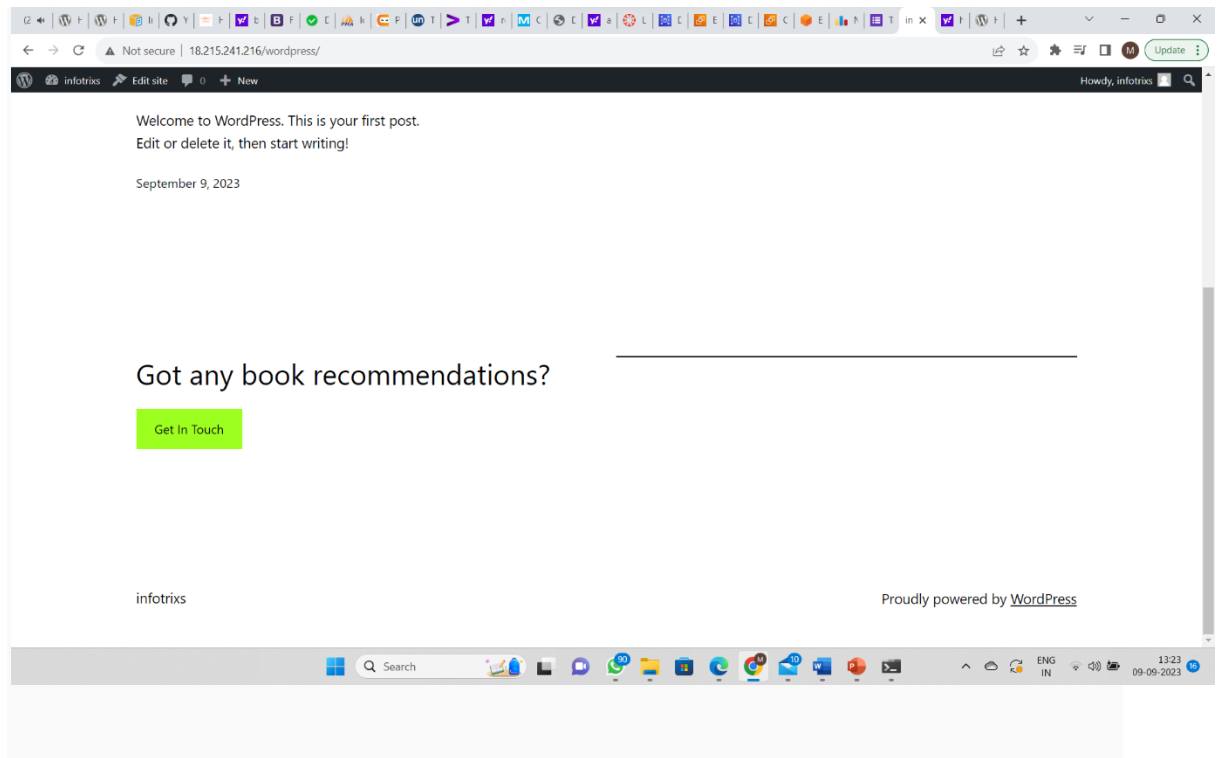
```
[ec2-user ~]$ sudo systemctl enable mariadb
```

Link.....

<http://18.215.241.216/wordpress/>

output





Task 2:

For microservices: 2 EC2 instance, 1 for wordpress and 1 for MYSQL

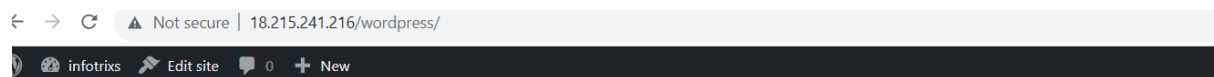
EC2 instance, 1 for wordpress

1. Open the Amazon EC2 console.
2. Click on "Launch Instance".
3. Choose an Amazon Machine Image (AMI) that supports Wordpress, such as Wordpress certified ubuntu automation:

...Check volume

4. Select an instance type based on your requirements.
5. Configure the instance details, such as network settings and storage.
6. Add any additional storage volumes if needed.
8. Review and launch the instance.
9. Create or select an existing key pair for secure access to the instance.
10. Launch the instance and wait for it to start.

Output:



Hello world!

Welcome to WordPress. This is your first post.
Edit or delete it, then start writing!

September 9, 2023

EC2 instance, 1 for MYSQL

1. Open the Amazon EC2 console.
2. Click on "Launch Instance".

3. Choose an Amazon Machine Image (AMI) that supports MySQL, such as Amazon Linux or Ubuntu.
4. Select an instance type based on your requirements.
5. Configure the instance details, such as network settings and storage.
6. Add any additional storage volumes if needed.
7. Configure security groups to allow access to the MySQL port (default is 3306).
8. Review and launch the instance.
9. Create or select an existing key pair for secure access to the instance.
10. Launch the instance and wait for it to start.

Output:

Instances (1) Info								
<input type="text" value="Find instance by attribute or tag (case-sensitive)"/> Connect Instance state ▼ Actions ▼ Launch instances ▼								
<input type="checkbox"/>	Name ▼	Instance ID	Instance state ▼	Instance type ▼	Status check	Alarm status	Availability Zone ▼	Public IPv4 DNS
<input type="checkbox"/>	MySQL	i-00b78887cd5e32bb9	Running	t2.micro	2/2 checks passed	No alarms +	us-east-1b	ec2-54-224-176-16

EC2 > Instances > i-00b78887cd5e32bb9

Instance summary for i-00b78887cd5e32bb9 (MySQL) [Info](#)

Updated less than a minute ago

Connect Instance state ▼ Actions ▼

Instance ID

i-00b78887cd5e32bb9 (MySQL)

Public IPv4 address

54.224.176.161 | [open address](#)

Private IPv4 addresses

172.31.33.137

IPv6 address

–

Instance state

Running

Public IPv4 DNS

ec2-54-224-176-161.compute-1.amazonaws.com | [open address](#)

Hostname type

IP name: ip-172-31-33-137.ec2.internal

Private IP DNS name (IPv4 only)

ip-172-31-33-137.ec2.internal

Answer private resource DNS name

IPV4 (A)

Instance type

t2.micro

Auto-assigned IP address

54.224.176.161 [Public IP]

VPC ID

vpc-0f5306da9aa1c1c13 | [open address](#)

IAM Role

–

Subnet ID

subnet-0c163c59841f7352a | [open address](#)

Elastic IP addresses

–

IMDSv2

Optional

AWS Compute Optimizer finding

[Opt-in to AWS Compute Optimizer for recommendations.](#)
[Learn more](#)

Auto Scaling Group name

–

Details

Security

Networking

Storage

Status checks

Monitoring

Tags

Commands used to host MySql Server on AWS EC2 Instance

Step 1: Update the system

```
sudo apt update
```

Step 2: Install MySql

```
sudo apt install mysql-server
```

Step 3: Check the Status of MySql (Active or Inactive)

```
sudo systemctl status mysql
```

Step 4: Login to MySql as a root

```
sudo mysql
```

Step 5: Update the password for the MySql Server

```
ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'place-your-password-here';
```

```
FLUSH PRIVILEGES;
```

Step 6: Test the MySql server if it is working by running sample sql queries

```
CREATE DATABASE mysql_test;
```

```
USE mysql_test;
```

```
CREATE TABLE table1 (id INT, name VARCHAR (45));
```

```
INSERT INTO table1 VALUES (1, 'Muneeb'), (2, 'Hillal'), (3, 'Javid'), (4, 'ABD');  
SELECT * FROM table1;
```

Output:

Link: 18.215.241.216



The screenshot shows an AWS CloudShell terminal window with the following content:

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

mysql> USE mysql_test;
Database changed
mysql> CREATE TABLE table1 (id INT, name VARCHAR(45));
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO table1 VALUES(1, 'Muneeb'), (2, 'Hillal'), (3, 'Javid'), (4, 'ABD');
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM table1
-> SELECT * FROM table1;
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 'SELECT * FROM table1' at line 2
mysql> SELECT* FROM table1;
+----+-----+
| id | name |
+----+-----+
| 1  | Muneeb |
| 2  | Hillal |
| 3  | Javid |
| 4  | ABD |
+----+-----+
4 rows in set (0.00 sec)

mysql>
```

Below the terminal window, the instance details are shown:

i-00b78887cd5e32bb9 (MySQL)
PublicIPs: 54.224.176.161 PrivateIPs: 172.31.33.137

The footer of the CloudShell window includes: CloudShell, Feedback, Language, © 2023, Amazon Web Services, Inc. or its affiliates, Privacy, Terms, Cookie preferences.