Experiment No: 12

Title: Develop a Mini Project using AWS

Aim: To implement studied modules of AWS in order to develop a mini project.

Theory:

Problem Statement:

Deploy WordPress Application with Amazon RDS using Load Balancer in AWS

WordPress:

WordPress is a free, open-source website creation platform. On a more technical level, WordPress is a content management system (CMS) written in PHP that uses a MySQL database.

WordPress is an excellent website platform for a variety of websites. From blogging to e-commerce to business and portfolio websites, WordPress is a versatile CMS. Designed with usability and flexibility in mind, WordPress is a great solution for both large and small websites.

AWS for WordPress:

Database maintenance for your WordPress site is critical. Your database instance holds all of your important data for your WordPress site. If the database goes down, your website may go down with it, and you could even lose your data.

Database maintenance can also be difficult, and database administrators have years of specialized experience. When setting up a WordPress site, you want to stay focused on designing your page and generating your content, not worrying about database performance and backups.

Amazon RDS for MySQL helps with both of these problems. Amazon RDS for MySQL is a managed database offering from AWS. With Amazon RDS for MySQL, you get:

- Automated backup and recovery so that you won’t lose data in the event of an accident;
- Regular updates and patches, keeping your database secure and performant;
- Easy installation with smart default parameters.

These features allow you to get a fast, reliable database without requiring specialized database knowledge. You can get on your way faster and start building your website.

AWS RDS:

Amazon Relational Database Service (RDS) is a managed SQL database service provided by Amazon Web Services (AWS). Amazon RDS supports an array of database engines to store and organize data. It also helps with relational database management tasks, such as data migration, backup, recovery and patching.

Amazon RDS facilitates the deployment and maintenance of relational databases in the cloud. A cloud administrator uses Amazon RDS to set up, operate, manage and scale a relational instance of a cloud database. Amazon RDS is not itself a database; it is a service used to manage relational databases.

AWS EC2:

The full form of Amazon EC2 is Amazon Elastic Compute Cloud. Amazon EC2 is one of the most used and most basic services on Amazon. EC2 is a machine with an operating system and hardware components of your choice. But the difference is that it is totally virtualized. You can run multiple virtual computers in a single physical hardware.

Elastic Compute Cloud (EC2) is one of the integral parts of the AWS ecosystem. EC2 enables on-demand, scalable computing capacity in the AWS cloud.

Amazon EC2 instances eliminate the up-front investment for hardware, and there is no need to maintain any rented hardware. It enables you to build and run applications faster. You can use EC2 in AWS to launch as many virtual servers as you need. Also, you can scale up or down when there is an increase or decrease in website traffic.

Elastic load balancer

Elastic load balancer is a service provided by Amazon in which the incoming traffic is efficiently automatically distributed across a group of backend servers in a manner that increases speed and performance. It helps to improve scalability of your application and secures your applications.

Load Balancer allows you to configure health checks for the registered targets. In case any of registered target fails the health check, the load balancer will not route traffic to that unhealthy target. Thereby ensuring your application is highly available and fault tolerant.

The word ‘elastic’ in Elastic Compute Cloud talks about the system’s capability of adapting to varying workloads and provisioning or de-provisioning resources according to the demand.

The implementation involves following steps:

1. Creating a MySQL Database with RDS: Configure the RDS database to allow access to specific entities.

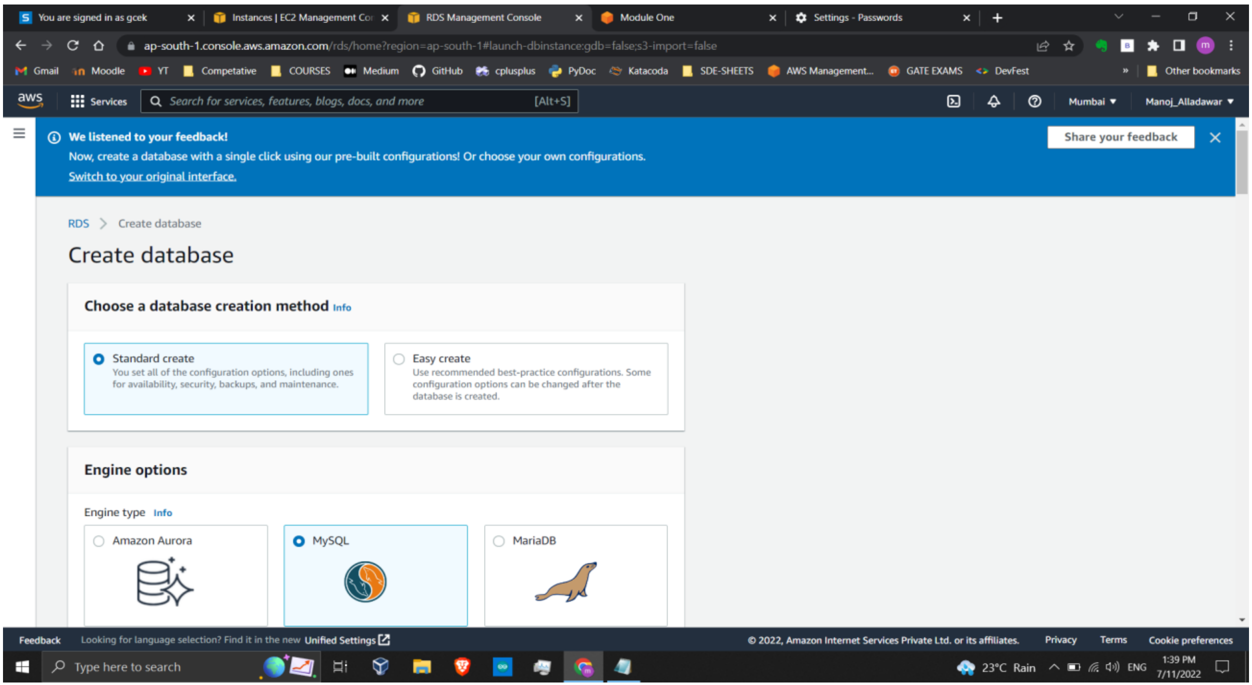
2. Creating an EC2 Instance: Create an EC2 instance to run your WordPress site.

3. Configuring Your RDS Database: Configure the RDS database to allow access to specific entities.

4. Configuring WordPress on EC2: Install the WordPress application and dependencies on the EC2 instance.

5. Applying Load Balancer.

Practical Implementation:



You are signed in as gcek | Instances | EC2 Management Co | RDS Management Console | Module One | Settings - Passwords

ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:gdb=false;s3-import=false

We listened to your feedback!

Now, create a database with a single click using our pre-built configurations! Or choose your own configurations.

Switch to your original interface.

RDS > Create database

Create database

Choose a database creation method Info

● Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

○ Easy create
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Engine options

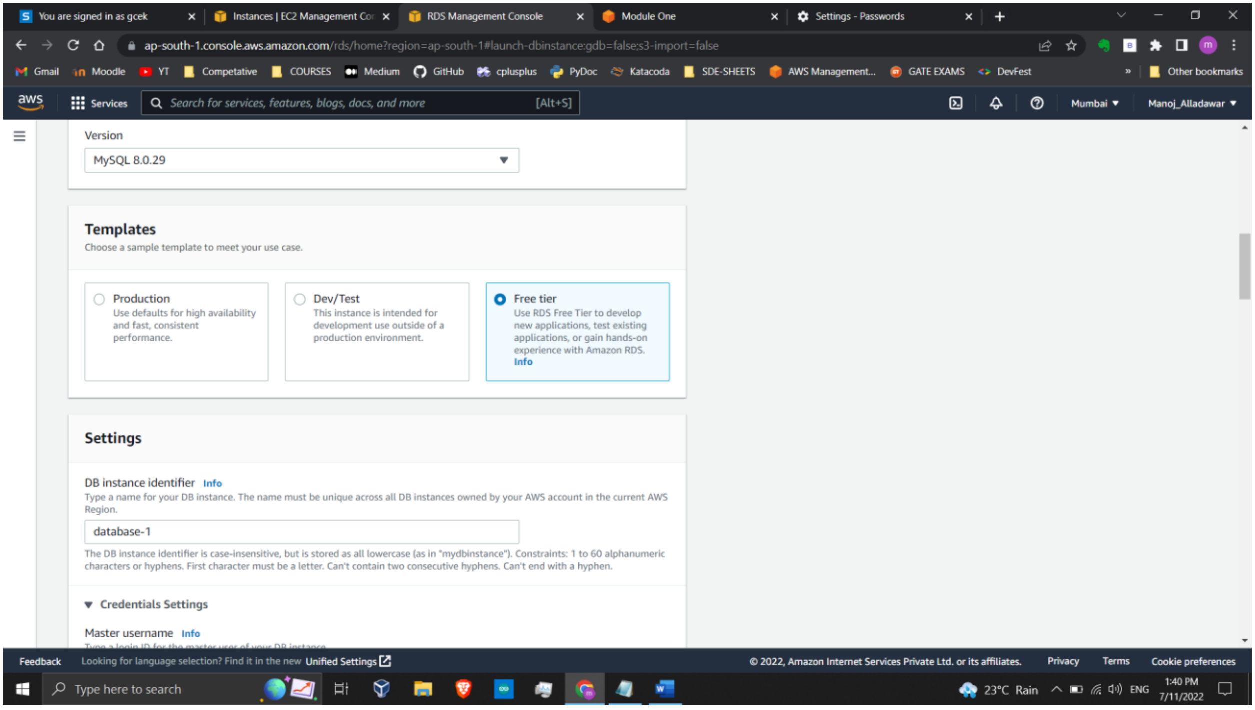
Engine type Info

○ Amazon Aurora

● MySQL

○ MariaDB

Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences
Type here to search
23°C Rain
ENG
1:39 PM
7/11/2022



You are signed in as gcek | Instances | EC2 Management Co | RDS Management Console | Module One | Settings - Passwords

ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:gdb=false;s3-import=false

Version

MySQL 8.0.29

Templates

Choose a sample template to meet your use case.

○ Production
Use defaults for high availability and fast, consistent performance.

○ Dev/Test
This instance is intended for development use outside of a production environment.

● Free tier
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. Info

Settings

DB instance identifier Info

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

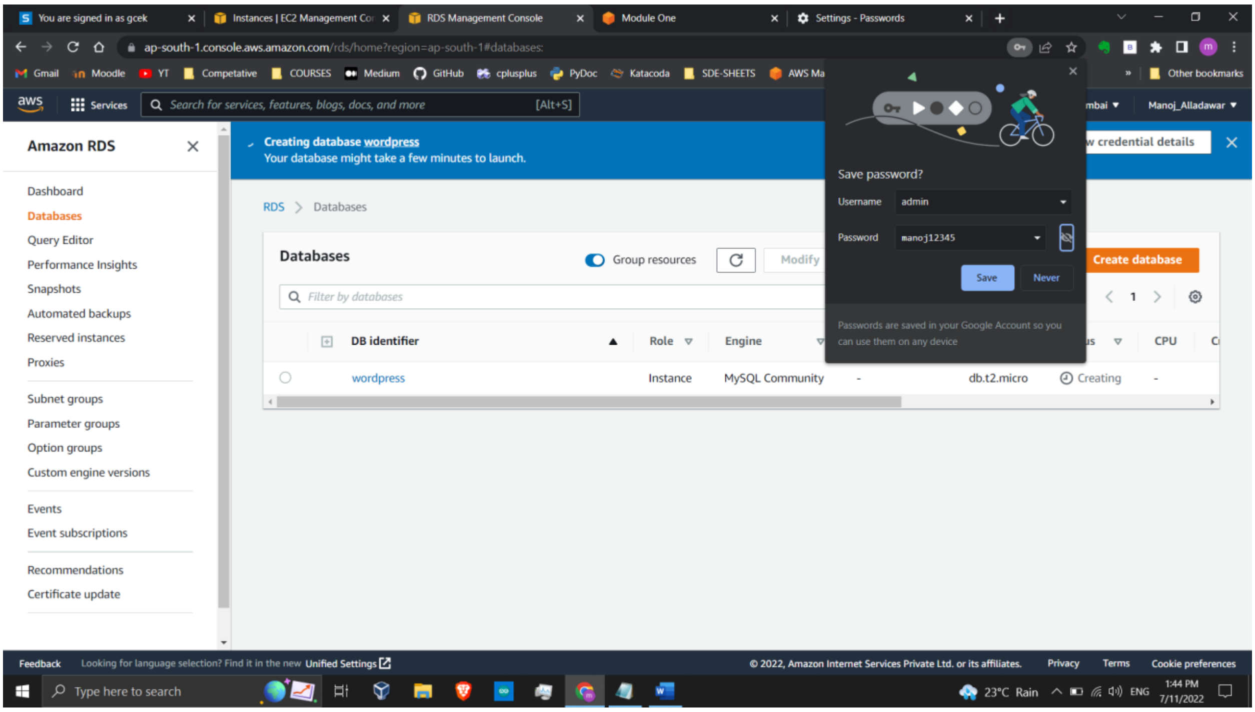
database-1

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

▼ Credentials Settings

Master username Info

Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences
Type here to search
23°C Rain
ENG
1:40 PM
7/11/2022



Creating database wordpress
Your database might take a few minutes to launch.

Save password?

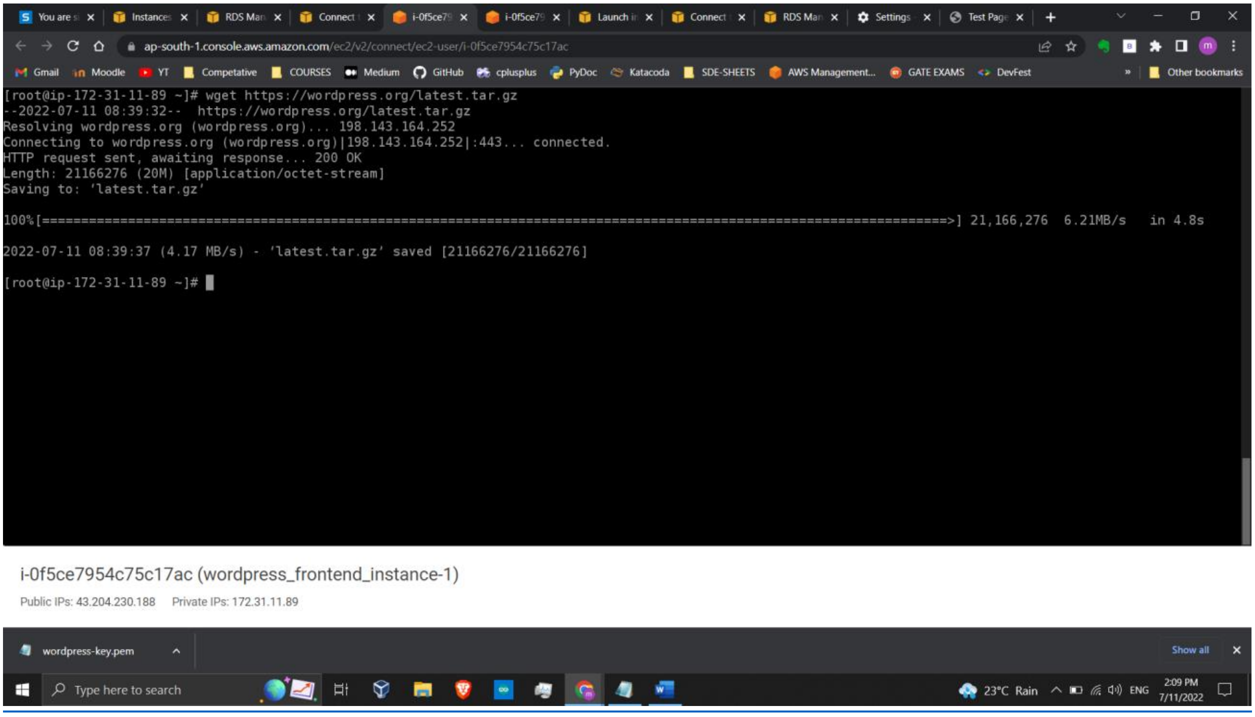
Username: admin

Password: manoj12345

Passwords are saved in your Google Account so you can use them on any device

DB identifier	Role	Engine			Status	CPU
wordpress	Instance	MySQL Community	-	db.t2.micro	Creating	-

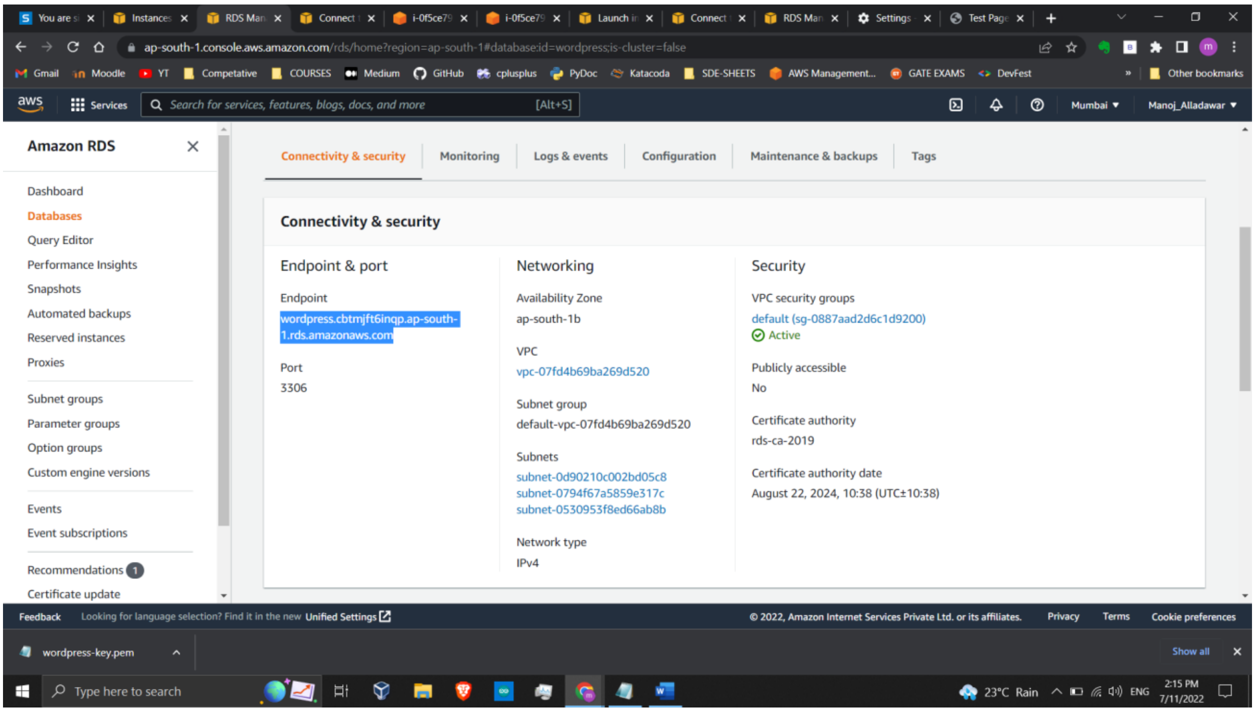
sudo yum install -y httpdwget https://wordpress.org/latest.tar.gz


ap-south-1.console.aws.amazon.com/ec2/v2/connect/ec2-user/i-0f5ce7954c75c17ac
wordpress-key.pem
Show all

```
[root@ip-172-31-11-89 ~]# wget https://wordpress.org/latest.tar.gz
--2022-07-11 08:39:32--  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: 21166276 (20M) [application/octet-stream]
Saving to: 'latest.tar.gz'

100%[=================================================================================================================>] 21,166,276  6.21MB/s   in 4.8s

2022-07-11 08:39:37 (4.17 MB/s) - 'latest.tar.gz' saved [21166276/21166276]

[root@ip-172-31-11-89 ~]#
```

i-0f5ce7954c75c17ac (wordpress_frontend_instance-1)

Public IPs: 43.204.230.188   Private IPs: 172.31.11.89



Connectivity & security

Endpoint & port

Endpoint
wordpress.cbtmjft6inqp.ap-south-1.rds.amazonaws.com

Port
3306

Networking

Availability Zone
ap-south-1b

VPC
vpc-07fd4b69ba269d520

Subnet group
default-vpc-07fd4b69ba269d520

Subnets
subnet-0d90210c002bd05c8
subnet-0794f67a5859e317c
subnet-0530953f8ed66ab8b

Network type
IPv4

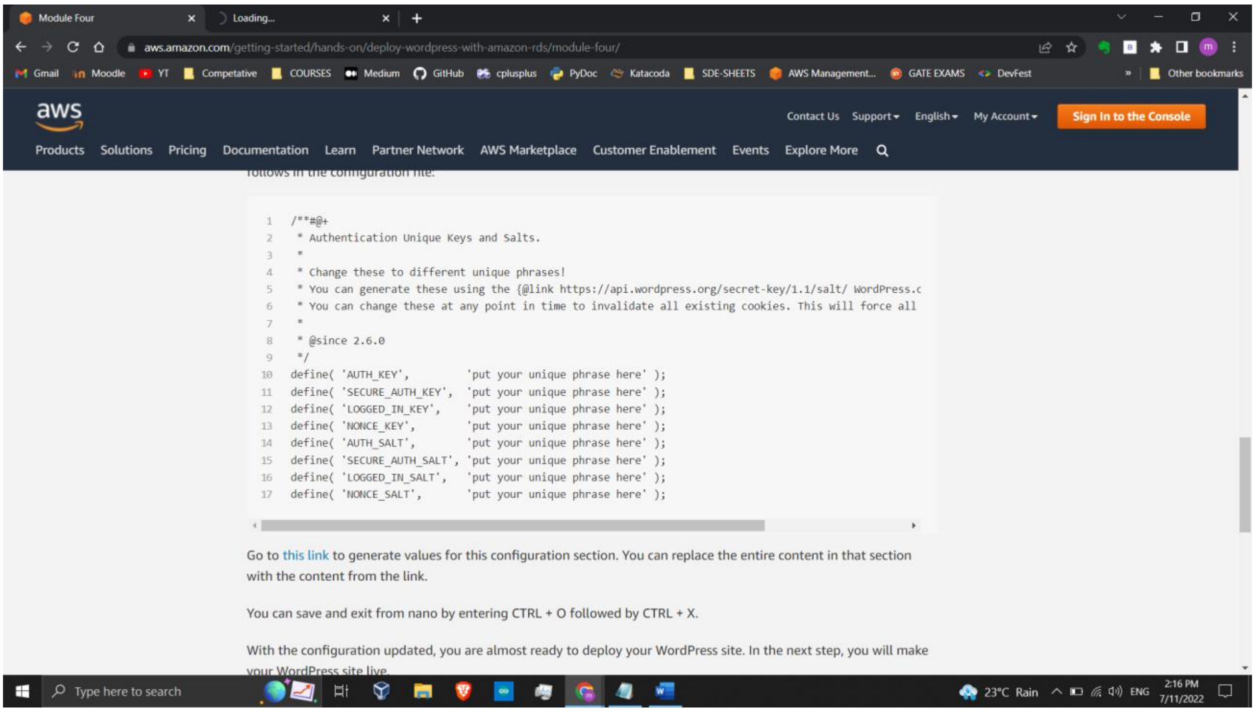
Security

VPC security groups
default (sg-0887aad2d6c1d9200)
Active

Publicly accessible
No

Certificate authority
rds-ca-2019

Certificate authority date
August 22, 2024, 10:38 (UTC±10:38)



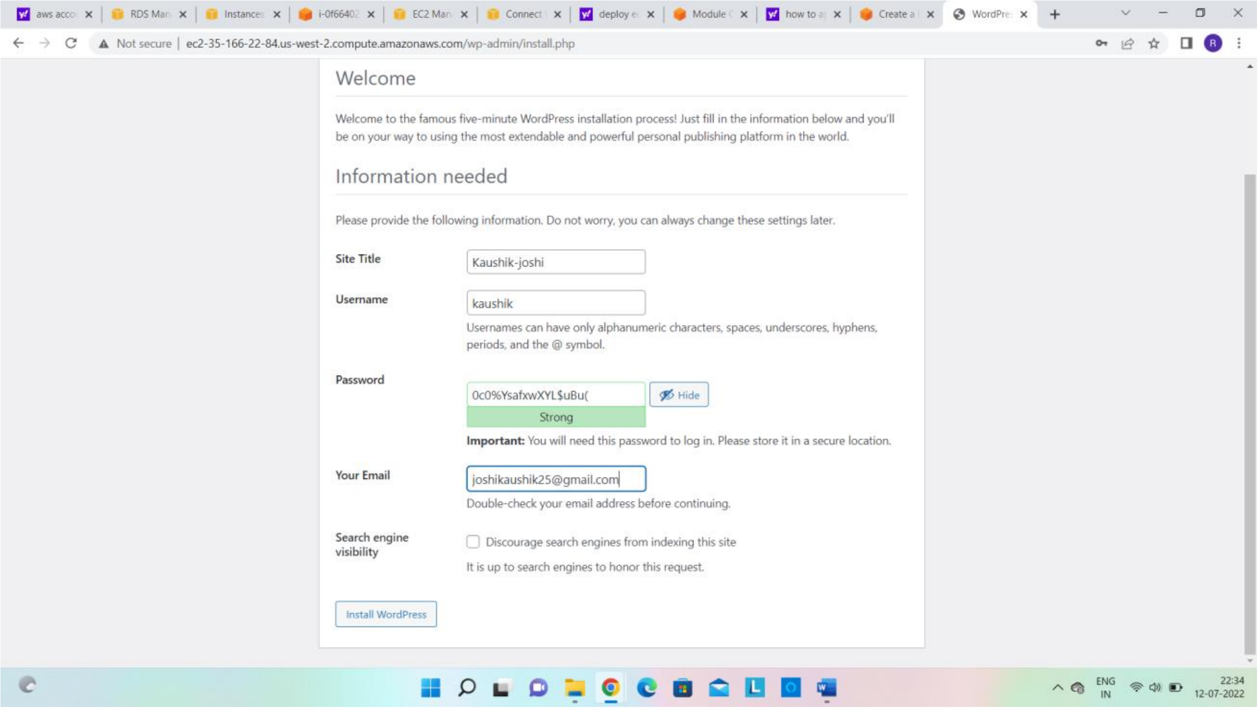
follows in the configuration file:

```
/**#@+
 * Authentication Unique Keys and Salts.
 *
 * Change these to different unique phrases!
 * You can generate these using the {@link https://api.wordpress.org/secret-key/1.1/salt/ WordPress.c
 * You can change these at any point in time to invalidate all existing cookies. This will force all
 *
 * @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' );
```

Go to this link to generate values for this configuration section. You can replace the entire content in that section with the content from the link.

You can save and exit from nano by entering CTRL + O followed by CTRL + X.

With the configuration updated, you are almost ready to deploy your WordPress site. In the next step, you will make your WordPress site live.



Welcome

Welcome to the famous five-minute WordPress installation process! Just fill in the information below and you'll be on your way to using the most extendable and powerful personal publishing platform in the world.

Information needed

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

Site Title Kaushik-joshi

Username kaushik

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

Password 0c0%YsafxwXYL$uBu(Hide

Strong

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

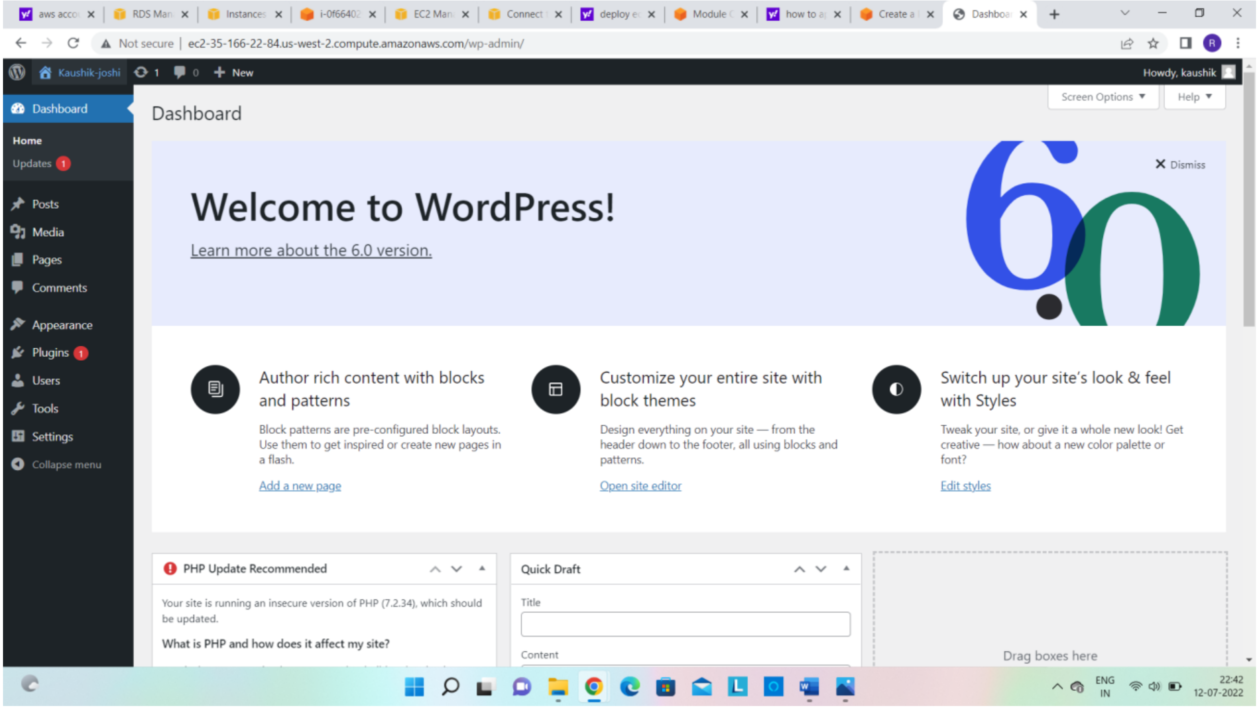
Your Email joshikaushik25@gmail.com

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



Dashboard

Welcome to WordPress!

Learn more about the 6.0 version.

Author rich content with blocks and patterns

Block patterns are pre-configured block layouts. Use them to get inspired or create new pages in a flash.

Add a new page

Customize your entire site with block themes

Design everything on your site — from the header down to the footer, all using blocks and patterns.

Open site editor

Switch up your site's look & feel with Styles

Tweak your site, or give it a whole new look! Get creative — how about a new color palette or font?

Edit styles

PHP Update Recommended

Your site is running an insecure version of PHP (7.2.34), which should be updated.

What is PHP and how does it affect my site?

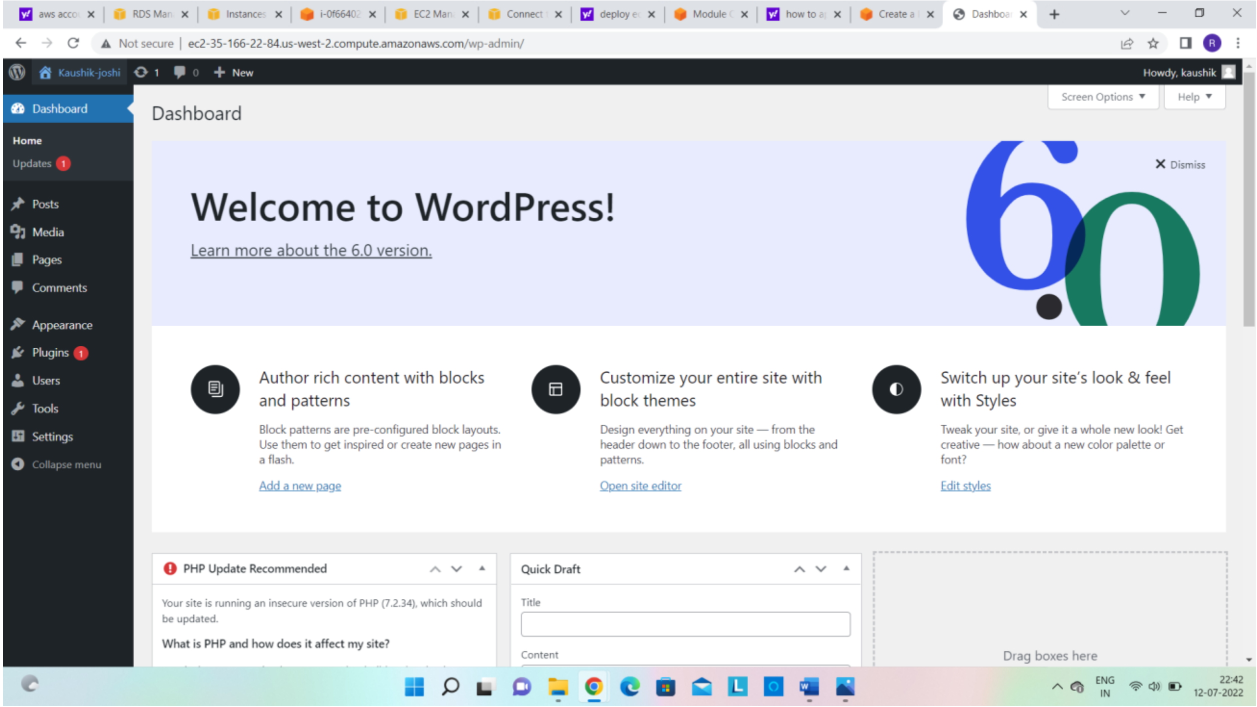
Quick Draft

Title

Content

Drag boxes here

Dashboard of Wordpress:-



ec2-35-166-22-84.us-west-2.compute.amazonaws.com/wp-admin/

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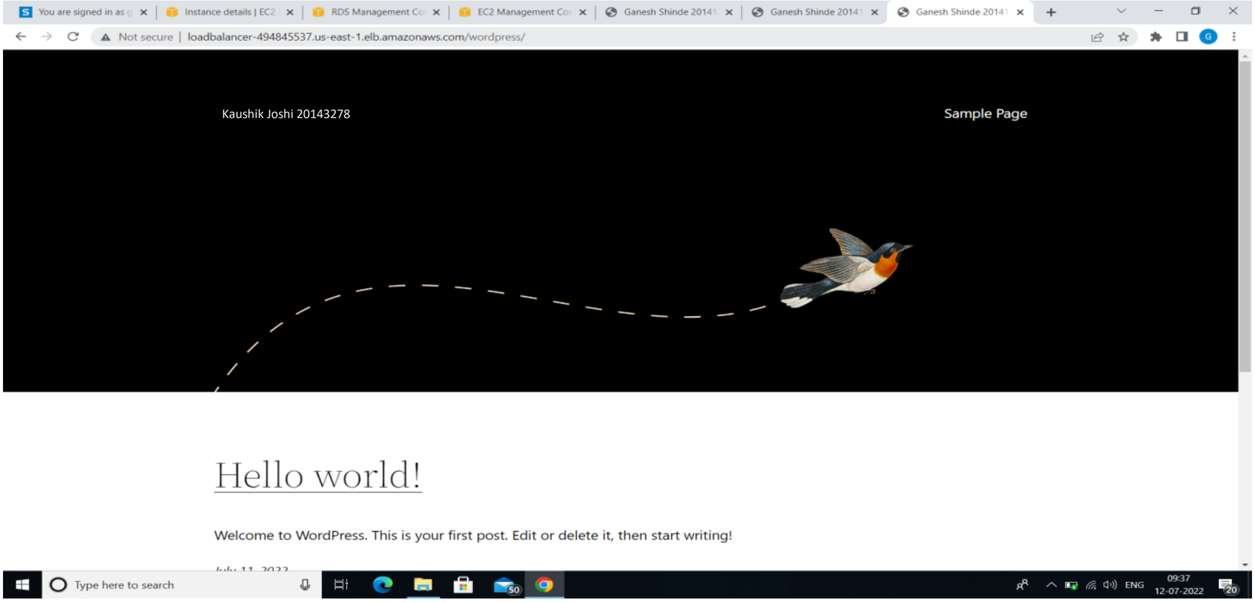
Title

Content

Drag boxes here

Webpage Using loadbalancer:-



loadbalancer-494845537.us-east-1.elb.amazonaws.com/wordpress/

Kaushik Joshi 20143278

Sample Page

Hello world!

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

Conclusion: Thus we have implemented studied modules of AWS in order to develop a mini project.