

TECHPLEMENT

Week1-Task

Submission for Cloud AWS Intern

Deploy Application in Monolithic and Microservices Architecture

i) Monolithic Architecture Deployment

1) Launch an EC2 Instance

- Go to the AWS Management Console.
- Navigate to EC2 Dashboard.
- Click "Launch Instance."
- Choose the Amazon Machine Image (AMI): ubuntu-*.
- Select instance type: t2-micro.
- Configure instance details and add storage.
- Add a tag with the name Monolithic-WordPress.
- Configure Security Group to allow HTTP (port 80), HTTPS (port 443), and MySQL/Aurora (port 3306).
- Review and launch the instance.

2) Install LAMP Stack (Linux, Apache, MySQL, PHP)

- sudo apt update
- sudo apt install apache2
- sudo apt install mysql-server
- sudo mysql_secure_installation
- sudo apt install php libapache2-mod-php php-mys

3) install and Configure WordPress

- bash
- Copy code
- wget https://wordpress.org/latest.tar.gz
- tar -xvzf latest.tar.gz
- sudo mysql -u root -p CREATE DATABASE wordpress;
- CREATE USER 'wordpressuser'@'localhost' IDENTIFIED BY 'password';
- GRANT ALL PRIVILEGES ON wordpress.* TO 'wordpressuser'@'localhost';
- FLUSH PRIVILEGES;
- EXIT;
- sudo systemctl restart apache2

4) Configure WordPress

- Open a browser and navigate to `http://your-ec2-public-ip/wordpress`.
- Follow the WordPress setup wizard to configure the database and create a welcome page as the homepage.

Monolithic Architecture

```
sudo su
apt update
apt install apache2 -y
apt install php libapache2-mod-php php-mysql -y
apt install mysql-server -y
```

INSQL

```
sql
ALTER USER 'root'@localhost IDENTIFIED WITH
mysql_native_password BY 'Altrin@909';
create user "wp_user"@"localhost" IDENTIFIED BY "Altrin@909";
create database wp;
grant all privileges on wp.* to "wp_user"@"localhost";
```

INWORD

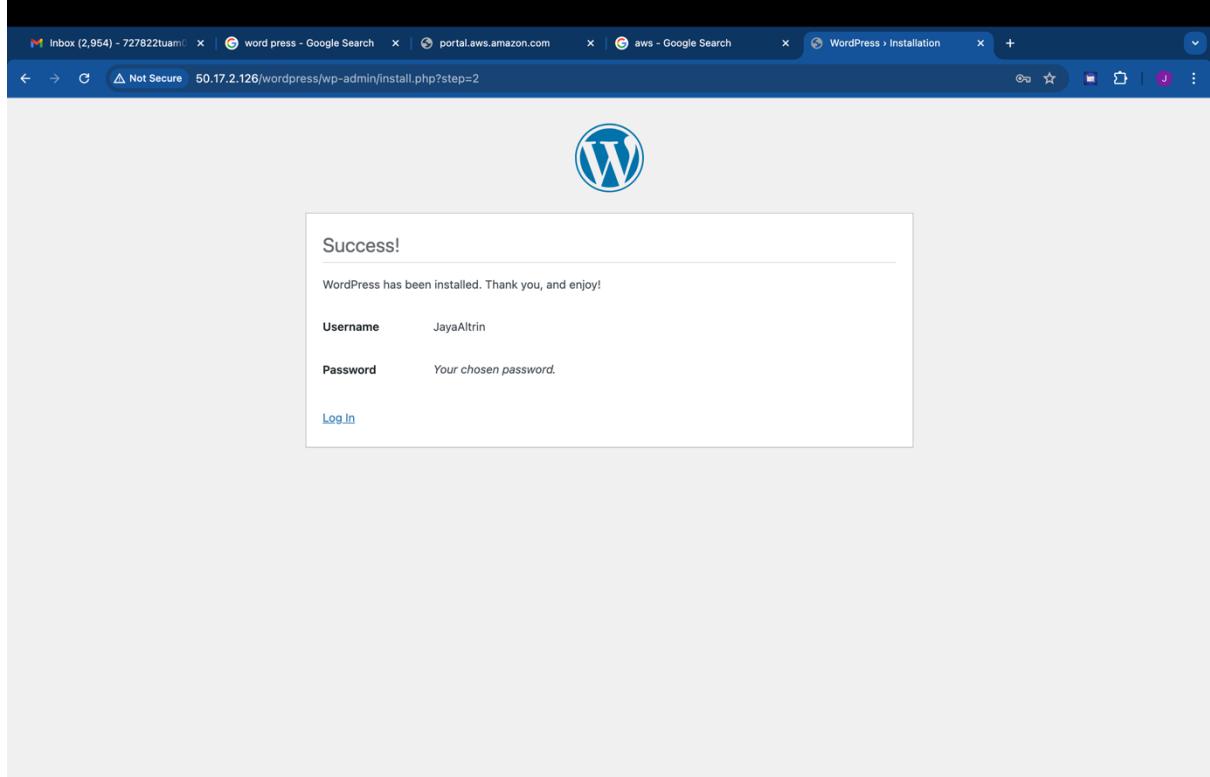
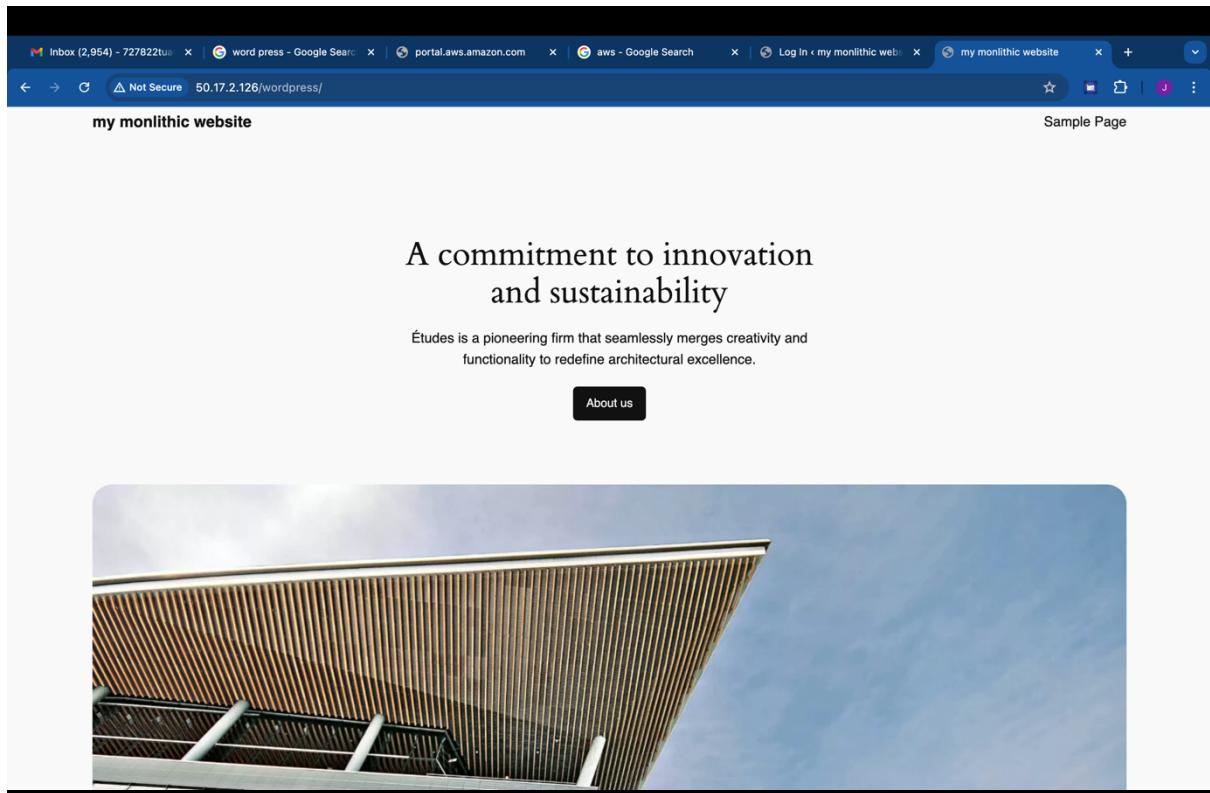
```
cd /tmp
wget -c http://wordpress.org/latest.tar.gz
tar -xzvf latest.tar.gz
mv wordpress/ /var/www/html/
cd /var/www/html/
```

There is a error occur in `ipaddress/wordpress`.so copy the code on that page and do as given below

```
cd wordpress
vim wp-config.php
```

To Run the application on `ipaddress` instead of the `ipaddress/wordpress`

```
cd /etc/apache2/sites-available/
vim 000-default.conf
systemctl restart apache2
```



The screenshot shows the initial step of the WordPress installation process. The title bar indicates the URL is 50.17.2.126/wordpress/wp-admin/install.php?language=en_US. The page features the classic blue WordPress logo at the top. Below it, a "Welcome" section informs the user about the five-minute installation process. A "Information needed" section follows, prompting for site title, username, password, email, and search engine visibility settings. The "Site Title" is set to "my monolithic website", "Username" to "JayaAltrin", and "Password" is a masked string. The "Your Email" field contains "jayaaltrin909@gmail.com". Under "Search engine visibility", there is a checkbox for "Discourage search engines from indexing this site". A note states, "It is up to search engines to honor this request." At the bottom is a blue "Install WordPress" button.

The screenshot shows the second step of the WordPress setup configuration. The title bar indicates the URL is 50.17.2.126/wordpress/wp-admin/setup-config.php?step=1. The page has the same blue header and logo. It asks the user to enter database connection details. The "Database Name" is "wp", "Username" is "wp_user", and "Password" is a masked string. The "Database Host" is "localhost", and the "Table Prefix" is "wp_". A note says, "If you want to run multiple WordPress installations in a single database, change this." At the bottom is a blue "Submit" button.

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "WordPress > Setup Configuration". The page content is as follows:

Welcome to WordPress. Before getting started, you will need to know the following items.

1. Database name
2. Database username
3. Database password
4. Database host
5. Table prefix (if you want to run more than one WordPress in a single database)

This information is being used to create a `wp-config.php` file. If for any reason this automatic file creation does not work, do not worry. All this does is fill in the database information to a configuration file. You may also simply open `wp-config-sample.php` in a text editor, fill in your information, and save it as `wp-config.php`. Need more help? [Read the support article on wp-config.php](#).

In all likelihood, these items were supplied to you by your web host. If you do not have this information, then you will need to contact them before you can continue. If you are ready...

[Let's go!](#)

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Apache2 Ubuntu Default Page". The page content is as follows:

Apache2 Default Page

 **Ubuntu** It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should [replace this file](#) (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/
-- apache2.conf
-- ports.conf
-- mods-enabled
|   |-- *,load
|   |   |-- *.conf
-- conf-enabled
|   '-- *,conf
-- sites-enabled
    '-- *,conf
```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain

Screenshot of the AWS Cloud9 IDE interface showing the AWS Lambda function code.

```

    const AWS = require('aws-sdk');
    const https = require('https');

    AWS.config.update({region: 'us-east-1'});

    exports.handler = async (event) => {
        const response = await https.get(`https://www.google.com`);
        return response;
    };

```

The AWS Lambda function code is displayed in the main editor area. The sidebar on the left shows the AWS Lambda service navigation pane with options like 'Lambda Functions', 'Triggers', 'Logs', and 'Metrics'.

The screenshot displays two side-by-side AWS Cloud9 environments. Both environments show the same configuration steps for launching an EC2 instance.

Top Environment:

- Instance type:** t2.micro (Free tier eligible)
- Key pair (login):** Monolithic
- Network settings:** vpc-0855dc6244e62c790, Subnet: No preference (Default subnet in any availability zone), Auto-assign public IP: Enabled
- Summary:** Number of instances: 1, Software Image (AMI): Canonical, Ubuntu, 24.04 LTS, Virtual server type: t2.micro, Firewall: New security group, Storage: 1 volume(s) - 8 GiB
- Launch Instance:** A modal window is open, showing the Free tier details: "In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet." It also shows a screenshot of the AWS Management Console.

Bottom Environment:

- Name and tags:** Name: Monolithic-Architecture
- Application and OS Images (Amazon Machine Image):** Search bar: "Search our full catalog including 1000s of application and OS images". Recents: Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE Linux Enterprise Server (SLES). Quick Start: Ubuntu Server 24.04 LTS (HVM), SSD Volume Type. Includes: "Including AMIs from AWS Marketplace and the Community".
- Summary:** Number of instances: 1, Software Image (AMI): Canonical, Ubuntu, 24.04 LTS, Virtual server type: t2.micro, Firewall: New security group, Storage: 1 volume(s) - 8 GiB
- Launch Instance:** A modal window is open, showing the Free tier details: "In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet."

Microservices Architecture Deployment

1) • Launch Two EC2 Instances

- Follow the same steps as in the monolithic deployment to launch two EC2 instances.
- Name one instance Microservice-WordPress and the other Microservice-MySQL.
- Configure the Security Groups:
 - Microservice-WordPress: Allow HTTP (port 80), HTTPS (port 443).
 - Microservice-MySQL: Allow MySQL/Aurora (port 3306) only from the Microservice-WordPress instance's IP.

2) Setup MySQL on the MySQL Instance

- SSH into the Microservice-MySQL instance and install MySQL:
 - sudo apt update
 - sudo apt install mysql-server
 - sudo mysql_secure_installation
 - sudo mysql -u root -p
 - CREATE DATABASE wordpress;
 - CREATE USER 'wordpressuser'@'wordpress-instance-private-ip' IDENTIFIED BY 'password';
 - GRANT ALL PRIVILEGES ON wordpress.* TO 'wordpressuser'@'wordpress-instance-private-ip';
 - FLUSH PRIVILEGES;
 - EXIT;

3) Setup WordPress on the WordPress Instance

- SSH into the Microservice-WordPress instance and install Apache, PHP, and WordPress:
 - sudo apt update
 - sudo apt install apache2
 - sudo apt install php libapache2-mod-php php-mysql
 - wget https://wordpress.org/latest.tar.gz
 - tar -xvzf latest.tar.gz
 - sudo mv wordpress /var/www/html/
 - sudo chown -R www-data:www-data /var/www/html/wordpress
 - sudo chmod -R 755 /var/www/html/wordpress
 - sudo systemctl restart apache2

1. 4) Configure WordPress to Use the Remote MySQL Database

- Open a browser and navigate to http://your-wordpress-instance-public-ip/wordpress.
- Follow the WordPress setup wizard and enter the MySQL instance's private IP address for the database configuration.
- Create a welcome page as the homepage.

Screenshot of the AWS EC2 Instances page showing two running t2.micro instances: MicroService-WordPress and MicroService-MYSQL.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability zone
MicroService-WordPress	i-0b555009eaab6ad5e	Running	t2.micro	2/2 checks passed	View alarms	us-east-1
MicroService-MYSQL	i-05b14fdc2986d360e	Running	t2.micro	2/2 checks passed	View alarms	us-east-1

Details for i-0b555009eaab6ad5e (MicroService-WordPress):

- Details:** Status and alarms, Monitoring, Security, Networking, Storage, Tags.
- Instance summary:**
 - Instance ID: i-0b555009eaab6ad5e (MicroService-WordPress)
 - Public IPv4 address: 100.24.38.189 | [open address](#)
 - IPv6 address: -
 - Instance state: Running
 - Private IP DNS name (IPv4 only): ip-172-31-18-197.ec2.internal
 - Answer private resource DNS name: IPv4 (A)
 - Instance type: t2.micro
 - Elastic IP addresses: 172.31.18.197
 - Public IPv4 DNS: ec2-100-24-38-189.compute-1.amazonaws.com | [open address](#)

CloudShell session output for the MicroService-WordPress instance:

```

wordpress/wp-admin/js/inline-edit-post.js
wordpress/wp-admin/js/uploads.js
wordpress/wp-admin/js/media-upload.js
wordpress/wp-admin/js/media.js
wordpress/wp-admin/js/editor-expand.min.js
wordpress/wp-admin/js/media-gallery.min.js
wordpress/wp-admin/js/common.min.js
wordpress/wp-admin/js/tags-box.min.js
wordpress/wp-admin/js/svg-painter.min.js
wordpress/wp-admin/js/custom-background.js
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
root@ip-172-31-29-217:/var/www/html# ls
index.html  wordpress
root@ip-172-31-29-217:/var/www/html# cd wordpress
root@ip-172-31-29-217:/var/www/html/wordpress# vim wp-config.php
root@ip-172-31-29-217:/var/www/html/wordpress# 

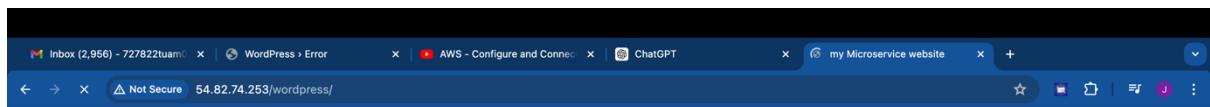
```

CloudShell session output for the MicroService-MYSQL instance:

```

i-05b14fdc2986d360e (MicroService-MYSQL)
Public IPs: 54.82.74.253 Private IPs: 172.31.29.217

```



my Microservice website

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us-east-1.console.aws.amazon.com

EC2 > Instances > Launch an instance

Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags Info

Name Add additional tags

Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

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

Recents Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Li [Browse more AMIs](#)
Including AMIs from AWS, Marketplace and the Community

Summary

Number of instances Info

Canonical, Ubuntu, 24.04 LTS, ... [read more](#)
ami-04b70fa74c45c3917

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel **Launch Instance** Review commands

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The screenshot displays two side-by-side AWS CloudFormation console pages for creating a new AWS Lambda function.

Left Page (Top): Network settings

- Network:** vpc-0855dc6244e62c790
- Subnet:** No preference (Default subnet in any availability zone)
- Auto-assign public IP:** Enabled
- Additional charges apply:** When outside of free tier allowance
- Firewall (security groups):** Info
- Create security group:** Selected (radio button)
- Select existing security group:** Unselected (radio button)
- Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.**

Right Page (Top): Summary

- Number of instances:** 1
- Software Image (AMI):** Canonical, Ubuntu, 24.04 LTS, ami-04b70fa74e45c3917
- Virtual server type (instance type):** t2.micro
- Firewall (security group):** New security group
- Storage (volumes):** 1 volume(s) - 8 GiB

Bottom: Free tier information

Left Page (Bottom): Configure storage

Right Page (Bottom): Launch instance

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