Question/Assignment 1

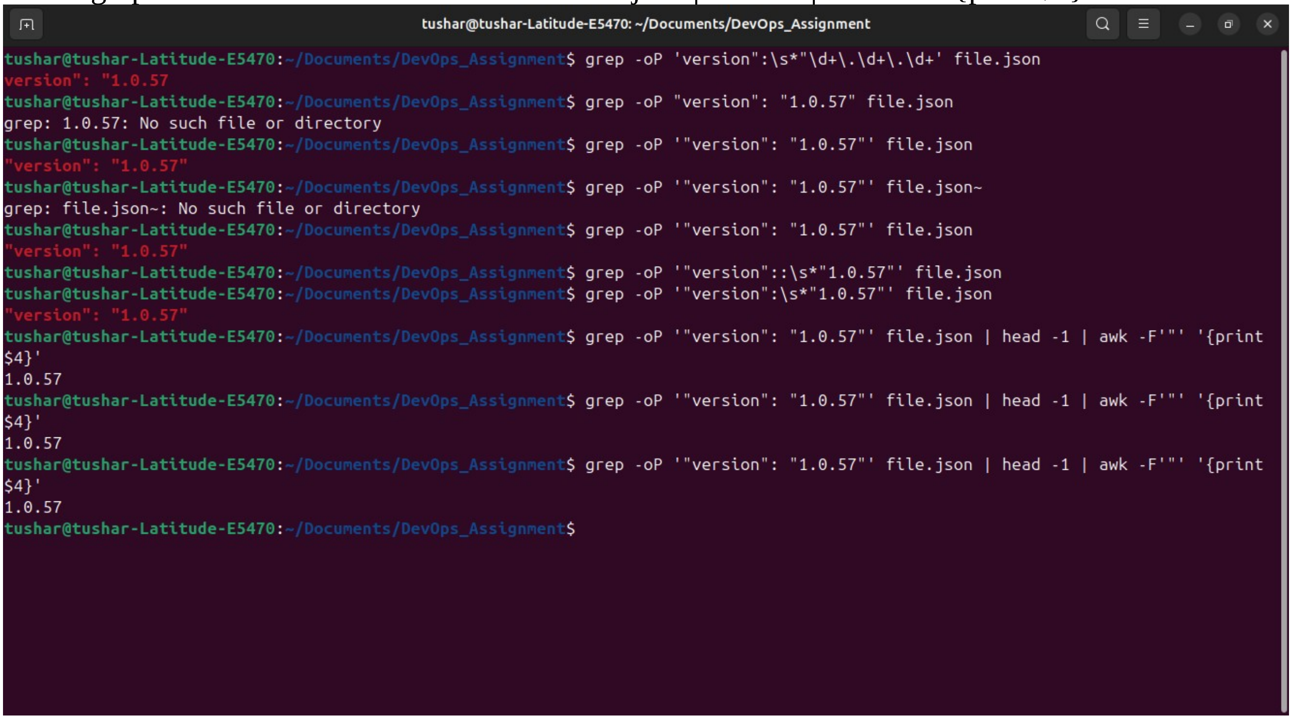
1. Kill all processes/zombie processes of service called “gunicorn” in a single command.
Ans :- pkill -9 gunicorn

2. MySQL shell command to show the unique IPs from where MySQL connections are being made to the Database.
Ans :- SELECT DISTINCT host FROM mysql.processlist

3. Bash command to get value of version number of 3 decimal points (first occurrence) from a file containing the JSON: {

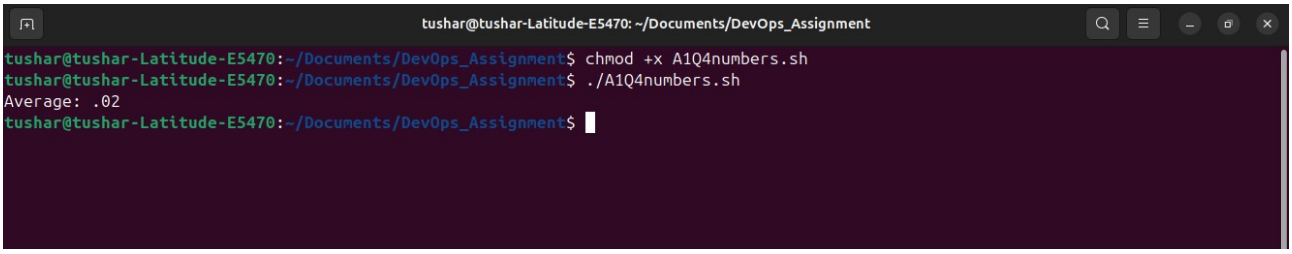
```
        "name": "abc",
        "version": "1.0",
        "version": "1.0.57",
        "description": "Testing",
        "main": "src/server/index.js",
        "version": "1.1"
}
```

Ans :- grep -oP '"version":\s*"\d+\.\d+\.\d+"' file.json | head -1 | awk -F'"' '{print $4}'

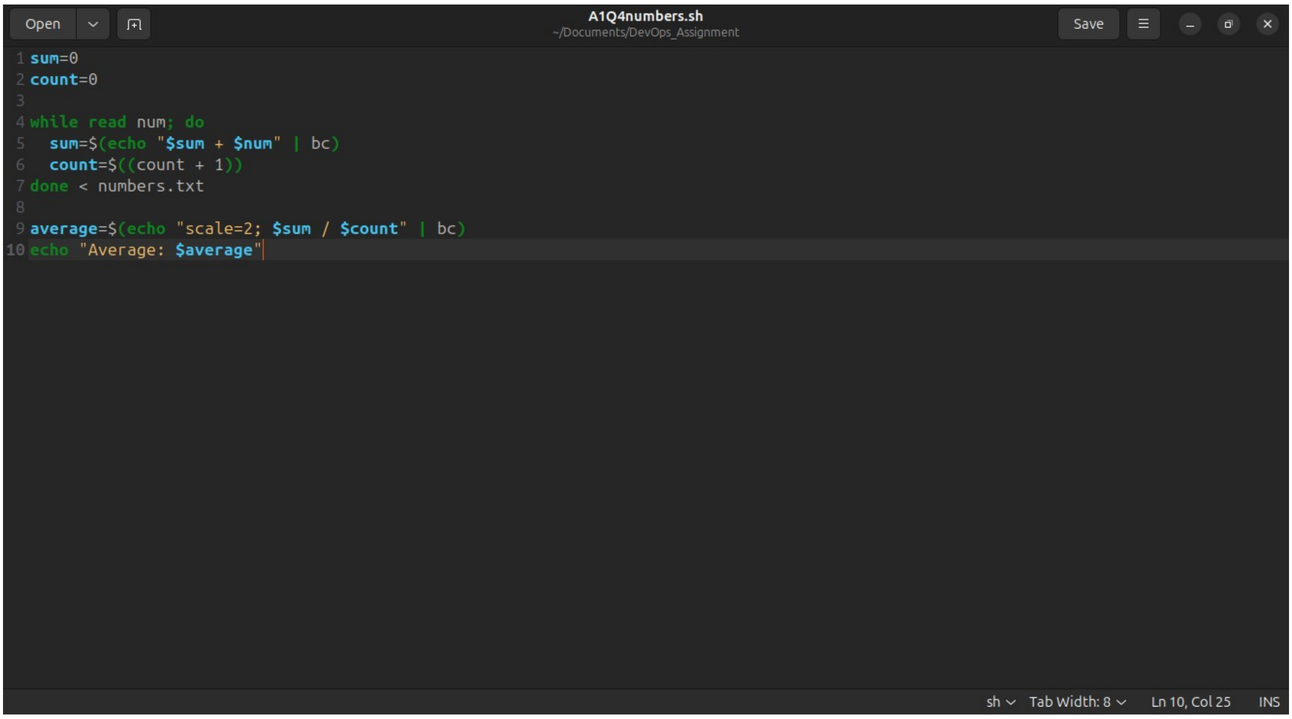


```
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP 'version":\s*"\d+\.\d+\.\d+' file.json
version": "1.0.57
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP "version": "1.0.57" file.json
grep: 1.0.57: No such file or directory
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP '"version": "1.0.57"' file.json
"version": "1.0.57"
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP '"version": "1.0.57"' file.json~
grep: file.json~: No such file or directory
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP '"version": "1.0.57"' file.json
"version": "1.0.57"
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP '"version"::\s*"1.0.57"' file.json
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP '"version":\s*"1.0.57"' file.json
"version": "1.0.57"
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP '"version": "1.0.57"' file.json | head -1 | awk -F'"' '{print
$4}'
1.0.57
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP '"version": "1.0.57"' file.json | head -1 | awk -F'"' '{print
$4}'
1.0.57
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ grep -oP '"version": "1.0.57"' file.json | head -1 | awk -F'"' '{print
$4}'
1.0.57
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$
```

4. Bash command to add these numbers from a file and find average upto 2 decimal points:
0.0238063905753
0.0308368914424
0.0230014918637
0.0274232220275
0.0184563749986
Ans :-



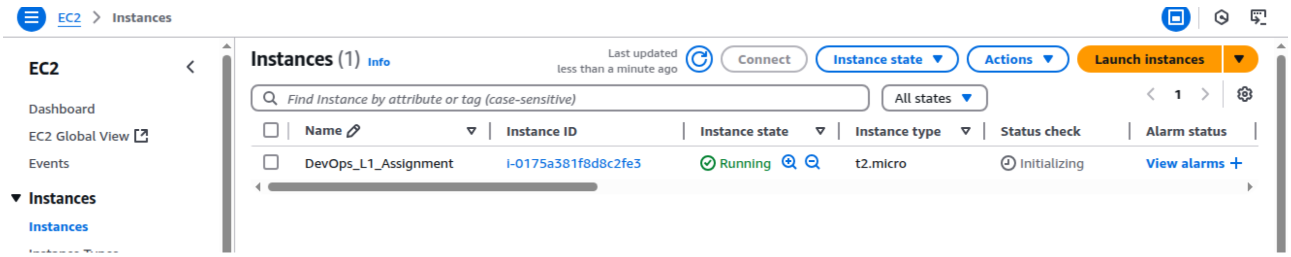
```
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ chmod +x A1Q4numbers.sh
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ ./A1Q4numbers.sh
Average: .02
tushar@tushar-Latitude-E5470:~/Documents/DevOps_Assignment$ 
```



```
sum=0
count=0

while read num; do
  sum=$(echo "$sum + $num" | bc)
  count=$((count + 1))
done < numbers.txt

average=$(echo "scale=2; $sum / $count" | bc)
echo "Average: $average"
```

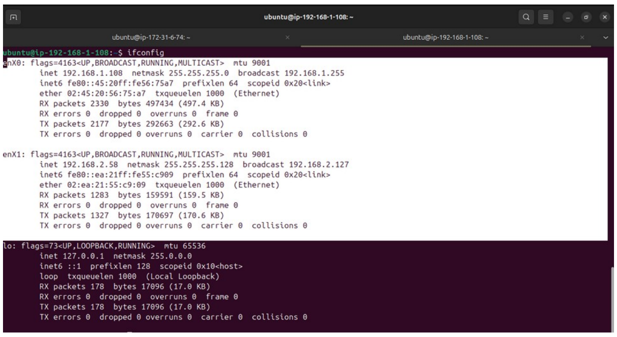
Question/Assignment 2

Create a Virtual Machine: Set up a VM using AWS

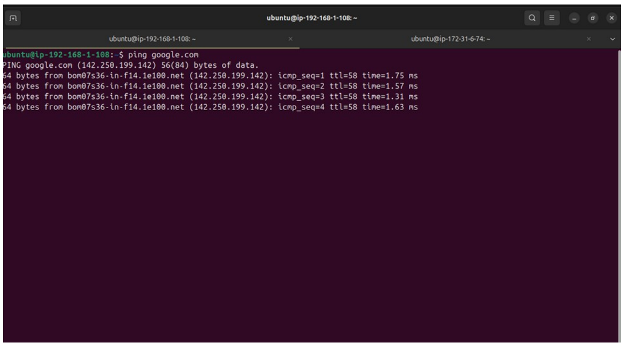


□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
□	DevOps_L1_Assignment	i-0175a381f8d8c2fe3	Running	t2.micro	Initializing	View alarms +

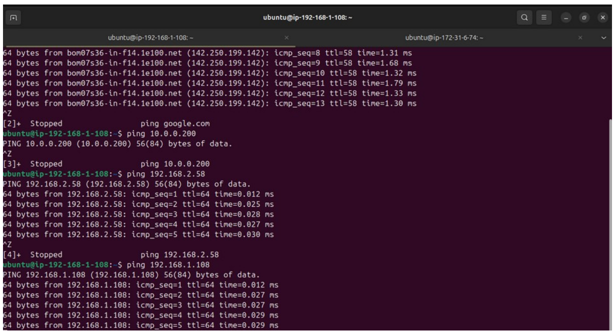
1)ip route show (done)
2)ping google.com (done)
3)ping 192.168.1.108 (done)
4)curl http://192.168.1.108 and curl http://52.66.208.130 (This is not done)



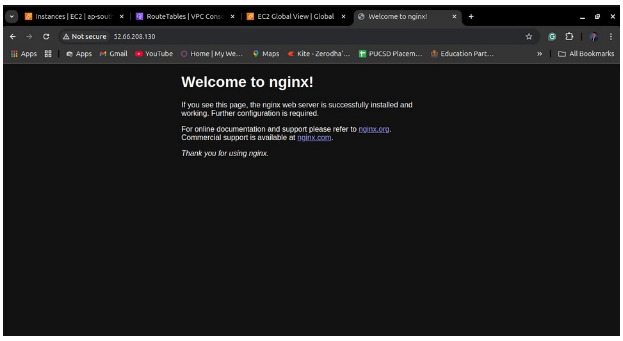
```
ubuntu@ip-192-168-1-108:~$ ifconfig
enX0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 9001
        inet 192.168.1.108  netmask 255.255.255.0  broadcast 192.168.1.255
        inet6 fe80::45:20ff:fe56:75a7  prefixlen 64  scopeid 0x20<link>
        ether 02:45:20:56:75:a7  txqueuelen 1000  (Ethernet)
        RX packets 2330  bytes 497434 (497.4 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 2177  bytes 292663 (292.6 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

enX1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 9001
        inet 192.168.2.58  netmask 255.255.255.128  broadcast 192.168.2.127
        inet6 fe80::ea:21ff:fe55:c909  prefixlen 64  scopeid 0x20<link>
        ether 02:ea:21:55:c9:09  txqueuelen 1000  (Ethernet)
        RX packets 1283  bytes 159591 (159.5 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 1327  bytes 170697 (170.6 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 178  bytes 17096 (17.0 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 178  bytes 17096 (17.0 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```



```
ubuntu@ip-192-168-1-108:~$ ping google.com
PING google.com (142.250.199.142) 56(84) bytes of data.
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=1 ttl=58 time=1.75 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=2 ttl=58 time=1.57 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=3 ttl=58 time=1.31 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=4 ttl=58 time=1.63 ms
```



```
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=8 ttl=58 time=1.31 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=9 ttl=58 time=1.68 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=10 ttl=58 time=1.32 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=11 ttl=58 time=1.79 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=12 ttl=58 time=1.33 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=13 ttl=58 time=1.30 ms
^Z
[2]+  Stopped                 ping google.com
ubuntu@ip-192-168-1-108:~$ ping 10.0.0.200
PING 10.0.0.200 (10.0.0.200) 56(84) bytes of data.
^Z
[3]+  Stopped                 ping 10.0.0.200
ubuntu@ip-192-168-1-108:~$ ping 192.168.2.58
PING 192.168.2.58 (192.168.2.58) 56(84) bytes of data.
64 bytes from 192.168.2.58: icmp_seq=1 ttl=64 time=0.012 ms
64 bytes from 192.168.2.58: icmp_seq=2 ttl=64 time=0.025 ms
64 bytes from 192.168.2.58: icmp_seq=3 ttl=64 time=0.028 ms
64 bytes from 192.168.2.58: icmp_seq=4 ttl=64 time=0.027 ms
64 bytes from 192.168.2.58: icmp_seq=5 ttl=64 time=0.030 ms
^Z
[4]+  Stopped                 ping 192.168.2.58
ubuntu@ip-192-168-1-108:~$ ping 192.168.1.108
PING 192.168.1.108 (192.168.1.108) 56(84) bytes of data.
64 bytes from 192.168.1.108: icmp_seq=1 ttl=64 time=0.012 ms
64 bytes from 192.168.1.108: icmp_seq=2 ttl=64 time=0.027 ms
64 bytes from 192.168.1.108: icmp_seq=3 ttl=64 time=0.027 ms
64 bytes from 192.168.1.108: icmp_seq=4 ttl=64 time=0.029 ms
64 bytes from 192.168.1.108: icmp_seq=5 ttl=64 time=0.029 ms
```



Welcome to nginx!

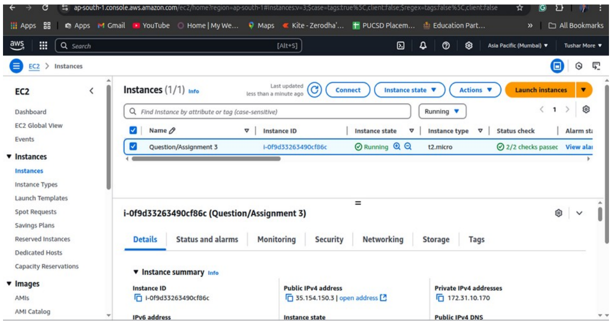
If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

Question/Assignment 3

Q) Write an executable bash script to set up a whole LAMP stack, PHP app can be Wordpress and DB can be MySQL.
Ans:-



Instances (1/1) Info — Last updated less than a minute ago

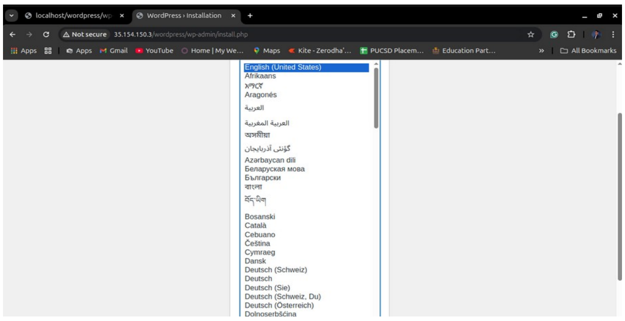
Find Instance by attribute or tag (case-sensitive) — Running

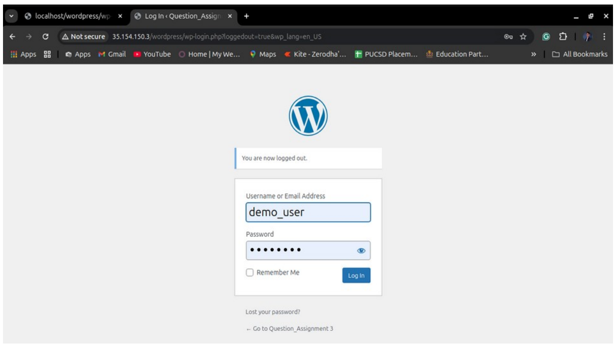
Name	Instance ID	Instance state	Instance type	Status check	Alarm st
☑ Question/Assignment 3	i-0f9d33263490cf86c	Running	t2.micro	2/2 checks passec	View ala

i-0f9d33263490cf86c (Question/Assignment 3)

Instance summary Info

Instance ID: i-0f9d33263490cf86c
Public IPv4 address: 35.154.150.3 | open address
Private IPv4 addresses: 172.31.10.170
IPv6 address
Instance state
Public IPv4 DNS





localhost/wordpress/wp
Log In ‹ Question_Assign
Not secure 35.154.150.3/wordpress/wp-login.php?loggedout=true&wp_lang=en_US

You are now logged out.

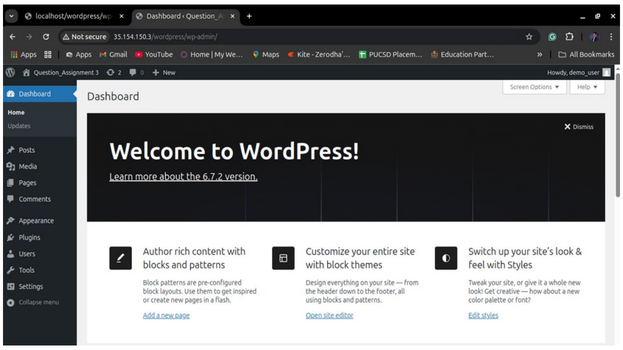
Username or Email Address: demo_user

Password: ••••••••

□ Remember Me — Log In

Lost your password?

← Go to Question_Assignment 3



Dashboard

Welcome to WordPress!

Learn more about the 6.7.2 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

How to Run `lamp_setup.sh`

#!/bin/bash
# Define variables
WEB_ROOT="/var/www/html"
DB_NAME="demo_db"
DB_USER="demo_user"
DB_PASS="Root@123"

# Update and install dependencies
echo "Updating system and installing required packages..."
sudo apt-get update
sudo apt install -y apache2 php libapache2-mod-php php-mysql php-curl php-gd php-mbstring php-xml php-xmlrpc php-soap php-intl php-zip wget unzip mysql-server

# Enable and start Apache
echo "Starting and enabling Apache..."
sudo systemctl enable --now apache2

# Secure MySQL installation (Non-interactive)
echo "Securing MySQL..."
sudo mysql -e "ALTER USER 'root'@'localhost' IDENTIFIED BY '$DB_PASS'; FLUSH PRIVILEGES;"

# Create MySQL database and user
echo "Creating MySQL database and user for WordPress..."
sudo mysql -u root -e "
CREATE DATABASE $DB_NAME;
CREATE USER '$DB_USER'@'localhost' IDENTIFIED WITH caching_sha2_password BY '$DB_PASS';
GRANT ALL PRIVILEGES ON $DB_NAME.* TO '$DB_USER'@'localhost';
FLUSH PRIVILEGES;"

```
# Download and configure WordPress
echo "Downloading WordPress..."
cd $WEB_ROOT
sudo wget -q https://wordpress.org/latest.tar.gz
sudo tar -xzf latest.tar.gz
sudo rm latest.tar.gz
sudo chown -R www-data:www-data $WEB_ROOT/wordpress
sudo chmod -R 755 $WEB_ROOT/wordpress

# Configure wp-config.php
echo "Configuring WordPress..."
sudo cp $WEB_ROOT/wordpress/wp-config-sample.php $WEB_ROOT/wordpress/wp-config.php
sudo sed -i "s/database_name_here/$DB_NAME/" $WEB_ROOT/wordpress/wp-config.php
sudo sed -i "s/username_here/$DB_USER/" $WEB_ROOT/wordpress/wp-config.php
sudo sed -i "s/password_here/$DB_PASS/" $WEB_ROOT/wordpress/wp-config.php

# Restart Apache
echo "Restarting Apache..."
sudo systemctl restart apache2

# Display completion message
echo "WordPress installation completed!"
```

Make the Script Executable

```
chmod +x lamp_setup.sh
```

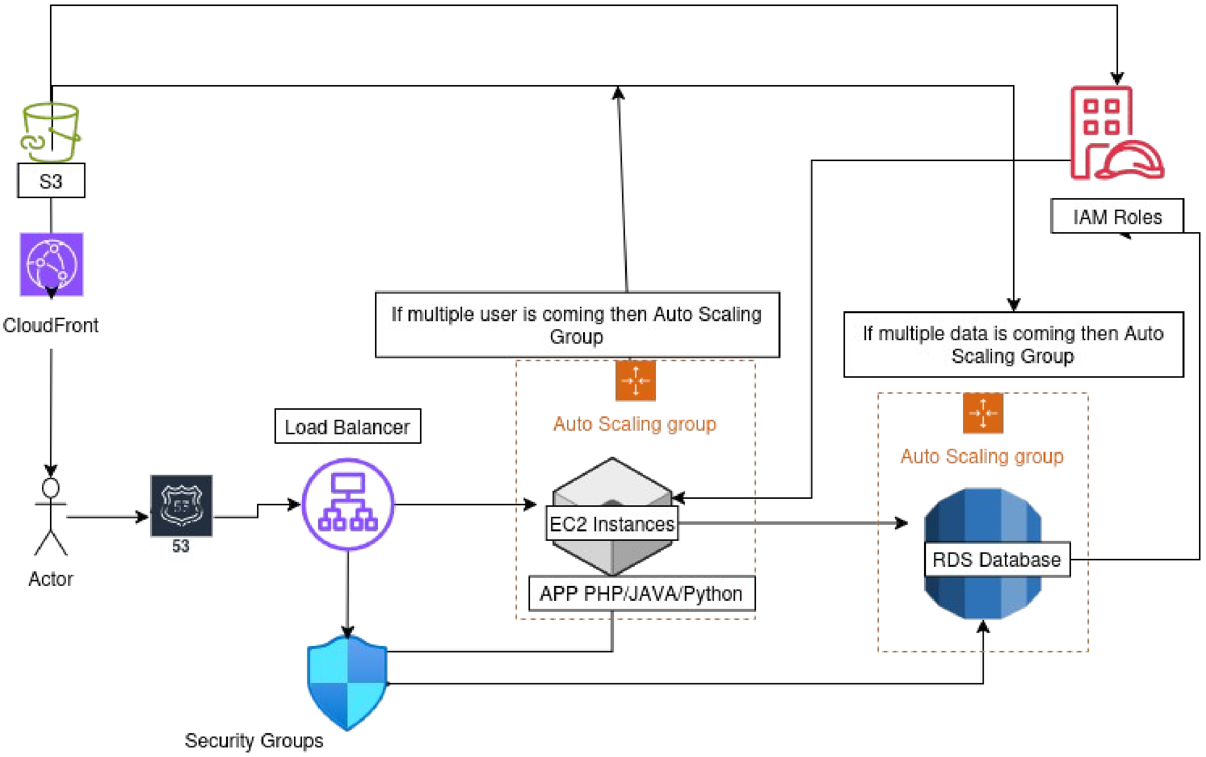
Run the Script

```
sudo ./lamp_setup.sh
```

Question/Assignment 4

Q)Let's say you are working on an application which is hosted on AWS or Azure. Draw an architecture diagram for a PHP/JAVA/Python-based application to be hosted on AWS with all mentions like VPC, AWS/any other cloud platform services, well-defined network segregation. Any more details that you think are necessary please do include them.

Ans:-



1)Adding CloudFront for Fast Content Delivery

I am adding CloudFront between the user and S3 because CloudFront caches static assets from S3 and serves them to users quickly.

2)Improving Security with Security Groups

I am adding Security Groups for the Load Balancer, EC2 Instances, and RDS Database.

The reason is that the Load Balancer communicates with EC2, and EC2 communicates with RDS, ensuring controlled access.

3) Assigning IAM Roles for Secure Access

I am assigning IAM Roles to EC2, RDS, and S3 for security reasons.

This ensures that instances can access required AWS services without hardcoded credentials.

4)Adding a VPC for Network Segmentation

In the Public Subnet, I have added the Load Balancer.

In the Private Subnet, I have added EC2 Instances and RDS for security reasons.

Flow of the Architecture:

Users → Route 53 → Load Balancer → Auto Scaling EC2 Instances (App) → RDS Database (Auto Scaling, based on load)

Storage:

- S3 for storing files, backups of RDS, large images, and log files.

Security:

- Security Groups for controlled network access.
- IAM Roles for managing secure access to AWS resources.