

# Assignment 1

AWS Basics and EC2 Instance

Cloud Computing (CIS443)

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**Submitted To**

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# 1 Part A: Creating an AWS account and Setup Zero Spend Budget plan

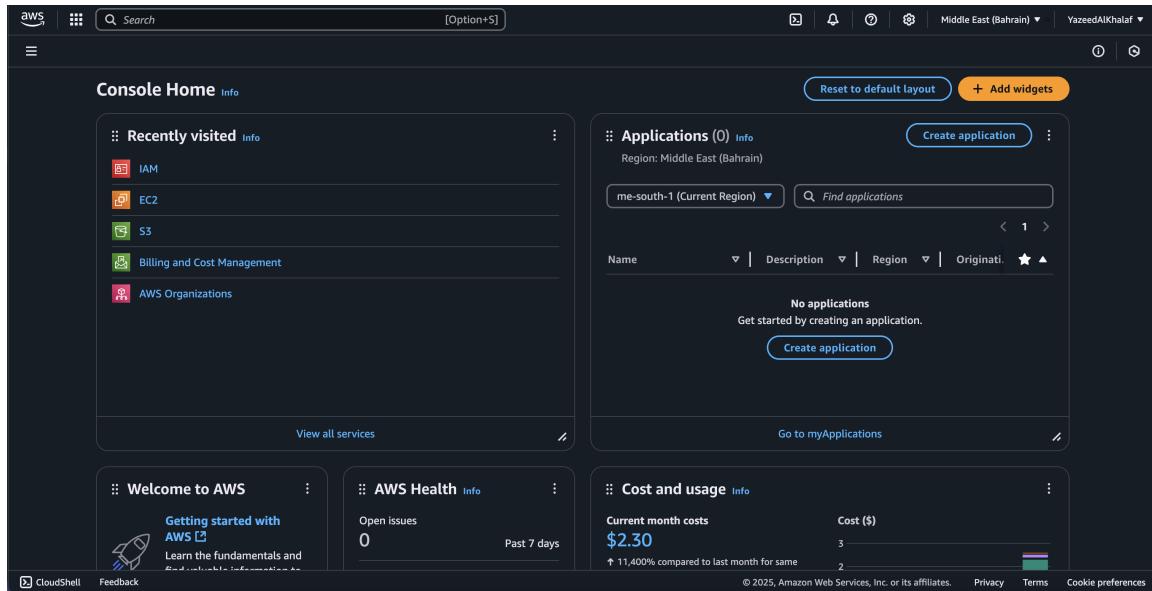


Figure 1: AWS Account Creation

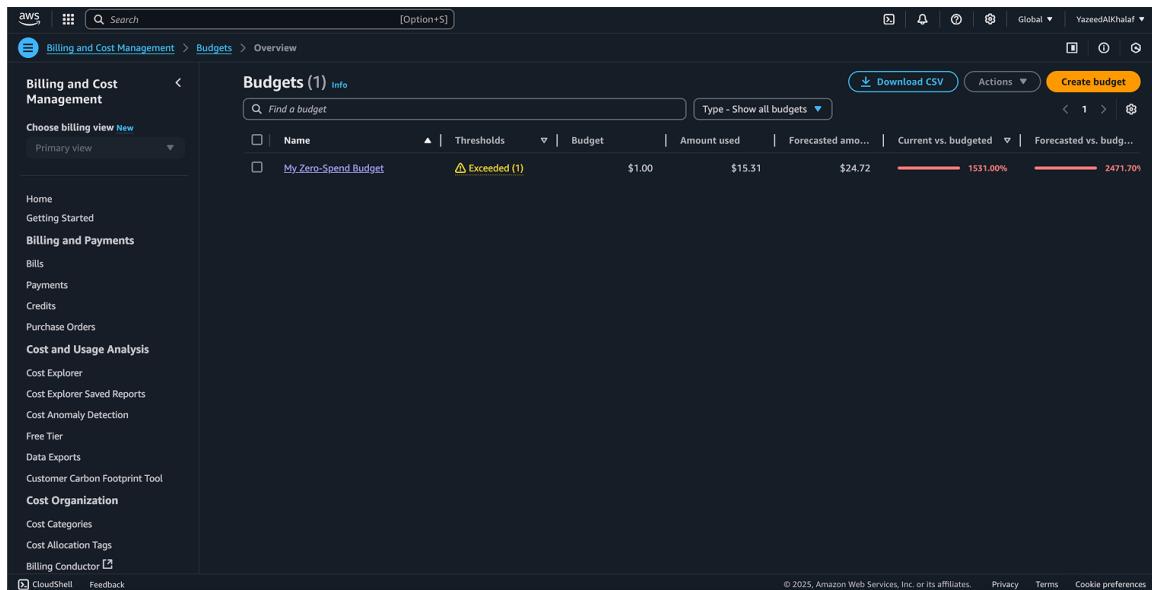


Figure 2: AWS Zero Spend Budget Configuration

## 2 Part B: Secure Your AWS Account

The screenshot shows the AWS IAM Dashboard. On the left, a sidebar lists navigation options: Dashboard, Access management (User groups, Users, Roles, Policies, Identity providers, Account settings, Root access management), Access reports (Access Analyzer, External access, Unused access, Analyzer settings, Credential report, Organization activity, Service control policies), and CloudShell Feedback.

The main content area includes:

- Security recommendations:** 2 items:
  - Root user has MFA: Having multi-factor authentication (MFA) for the root user improves security for this account.
  - Root user has no active access keys: Using access keys attached to an IAM user instead of the root user improves security.
- IAM resources:** Summary table:

User groups	Users	Roles	Policies	Identity providers
0	3	12	0	0
- What's new:** Updates for features in IAM (Introducing resource control policies (RCPs) to centrally restrict access to AWS resources, AWS IAM now supports PrivateLink in the AWS GovCloud (US) Regions, Streamline automation of policy management workflows with service reference information, Amazon S3 Access Grants introduce the ListCallerAccessGrants API).
- AWS Account:** Account ID (redacted), Account Alias (Create), Sign-in URL for IAM users in this account (<https://sign-in.aws.amazon.com/> console).
- Quick Links:** My security credentials, Manage your access keys, multi-factor authentication (MFA) and other credentials.
- Tools:** Policy simulator.

Figure 3: AWS Account Security Configuration

### 3 Part C: Create IAM Account

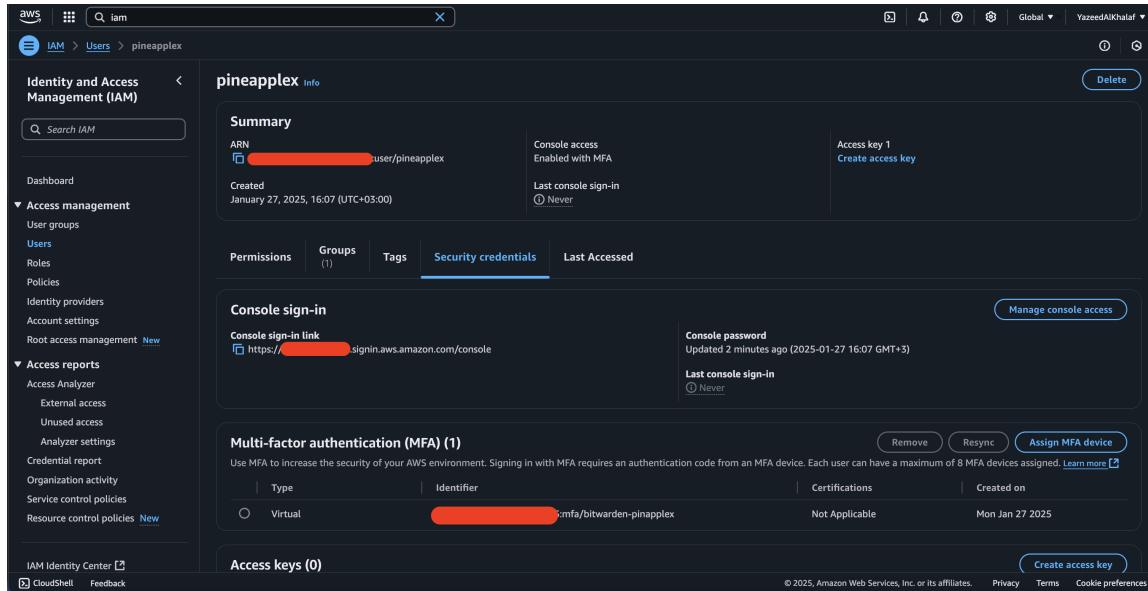


Figure 4: IAM Account Creation and Setup

## 4 Part D: Create EC2 Instance and Security Groups

### 4.1 Launch EC2 Instance

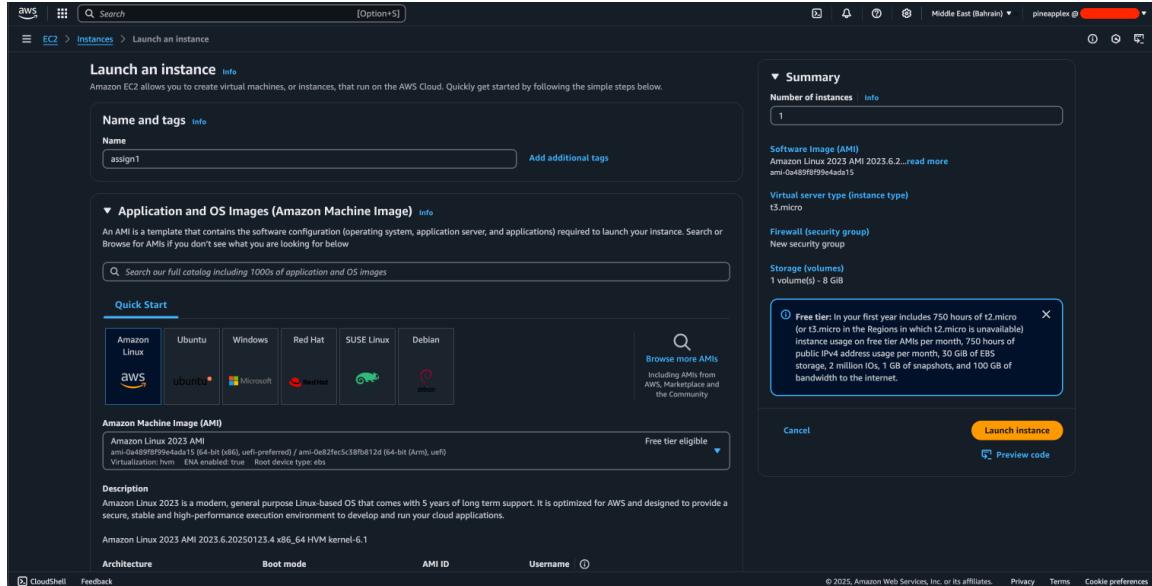


Figure 5: EC2 Instance Launch Configuration - Instance Type Selection

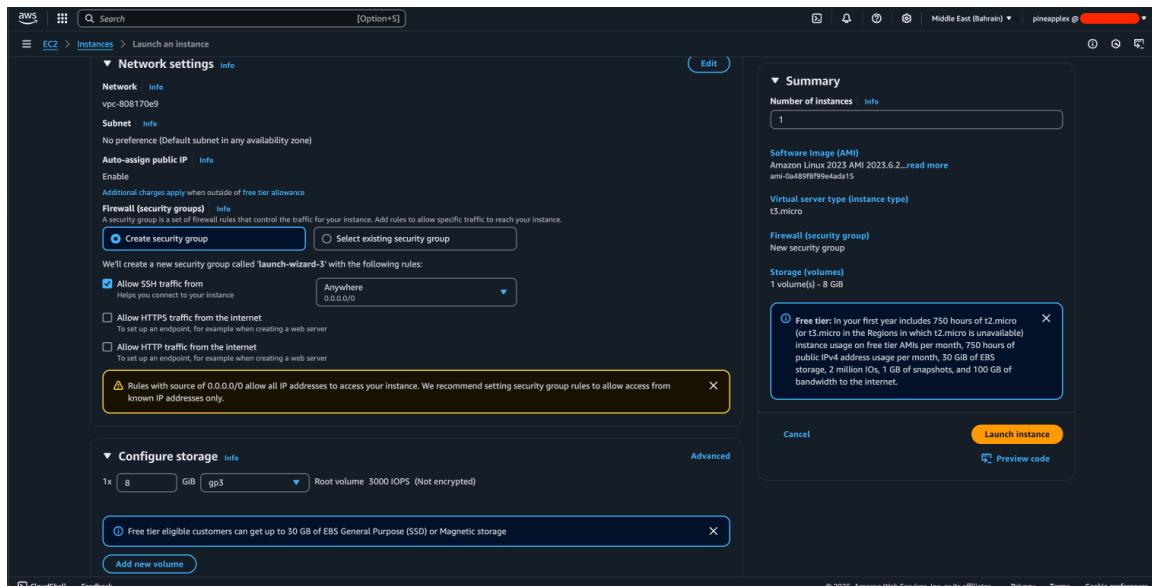


Figure 6: EC2 Instance Launch Configuration - Network Settings

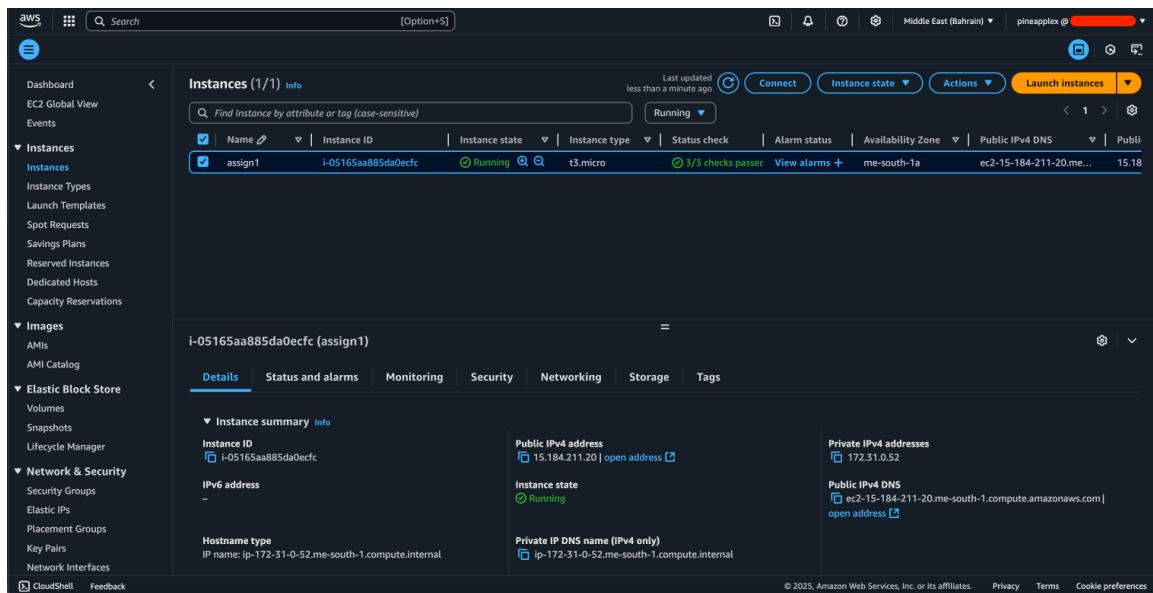


Figure 7: EC2 Instance Launch Configuration - Successfully Launched

## 4.2 Create Security Groups

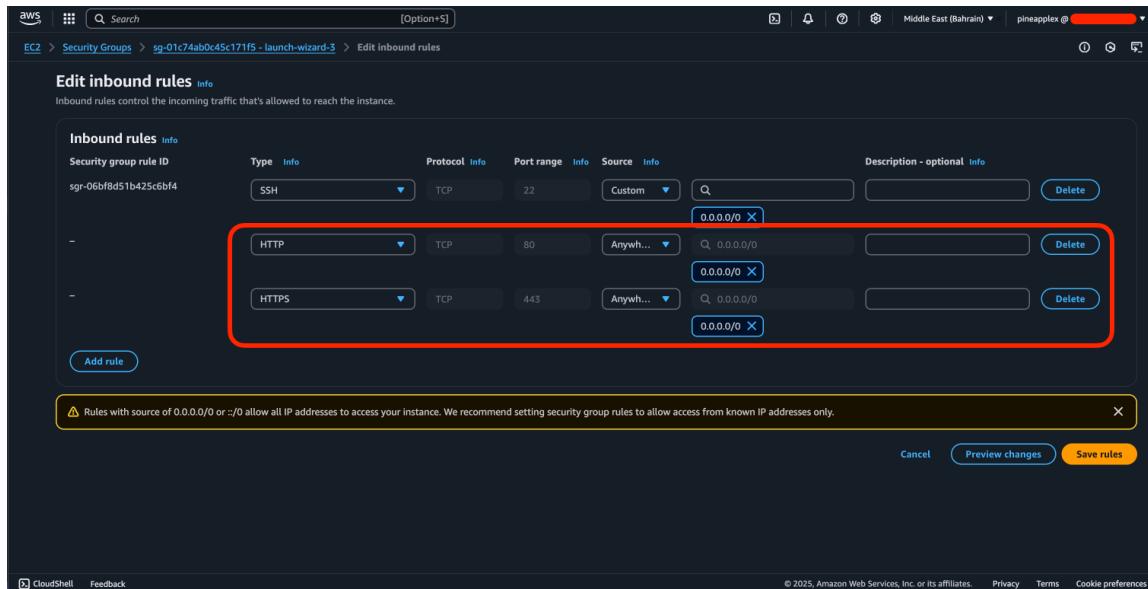


Figure 8: Security Group Configuration - Inbound Rules Addition

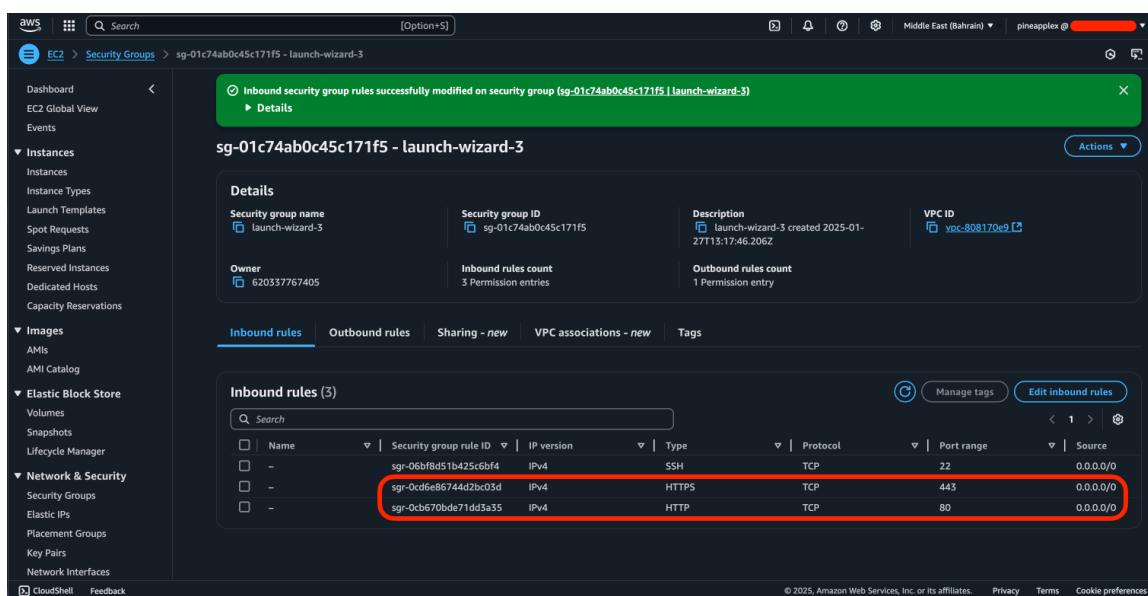


Figure 9: Security Group Configuration - Outbound Rules Verification

## 4.3 Configure Elastic IP

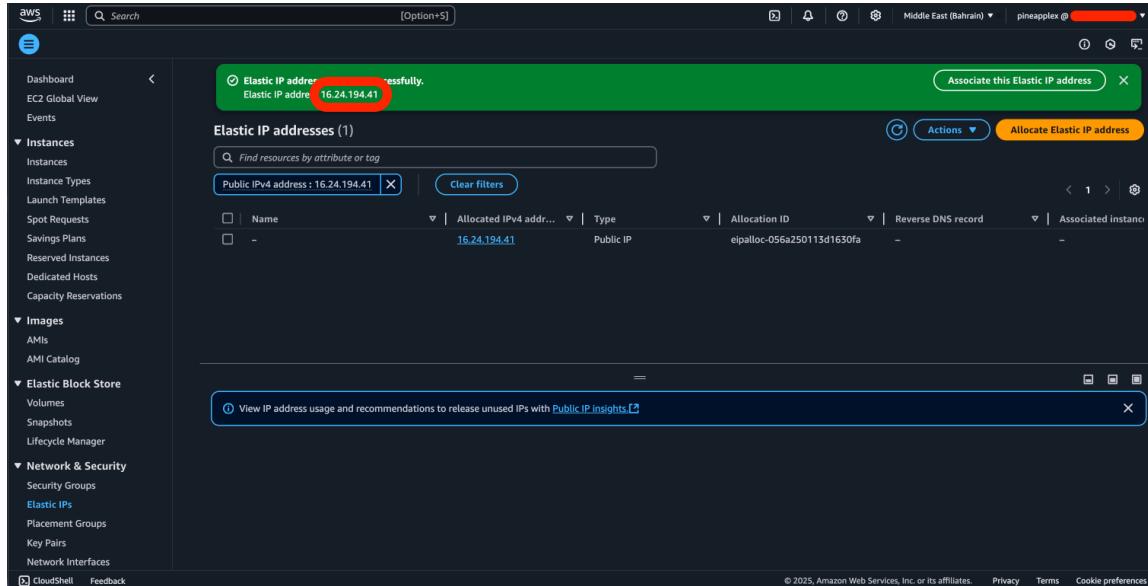


Figure 10: Elastic IP Configuration - Allocation

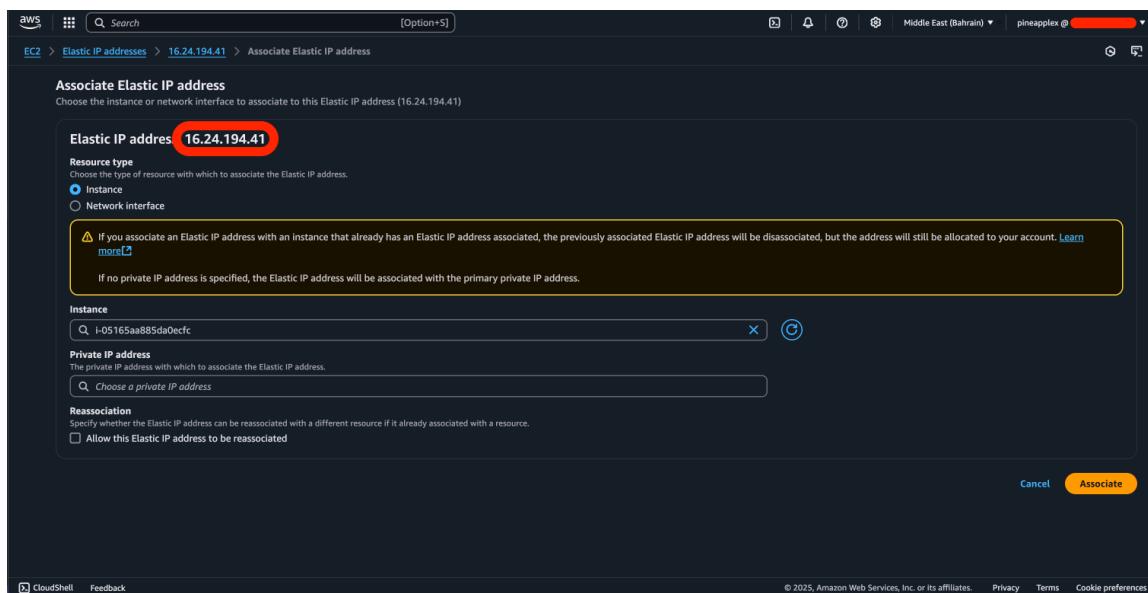


Figure 11: Elastic IP Configuration - Association

The screenshot shows the AWS EC2 Instances page. In the top navigation bar, the path is EC2 > Elastic IP addresses > 16.24.194.41. The main table lists one instance, 'assign1', which is running and has an 't3.micro' instance type. The 'Elastic IP' column shows '16.24.194.41'. Two specific entries in this column are highlighted with red circles: '16.24.194.41' and '16.24.194.41'. Below the table, the instance details for 'i-05165aa885da0ecfc (assign1)' are displayed. The 'Details' tab is selected, showing the following information:

Attribute	Value
Instance ID	i-05165aa885da0ecfc
IPv6 address	-
Hostname type	IP name: ip-172-31-0-52.me-south-1.compute.internal IPv4 (A)
Answer private resource DNS name	Auto-assigned IP address
Public IPv4 address	16.24.194.41 [open address]
Instance state	Running
Private IP DNS name (IPv4 only)	ip-172-31-0-52.me-south-1.compute.internal
Instance type	t3.micro
VPC ID	-
Public IPv4 DNS	ec2-16-24-194-41.me... [open address]
Private IPv4 address	172.31.0.52
Elastic IP addresses	16.24.194.41 [Public IP]

Figure 12: Elastic IP Configuration - Verification

## 5 Part E: Install a LAMP web server on Amazon Linux 2023

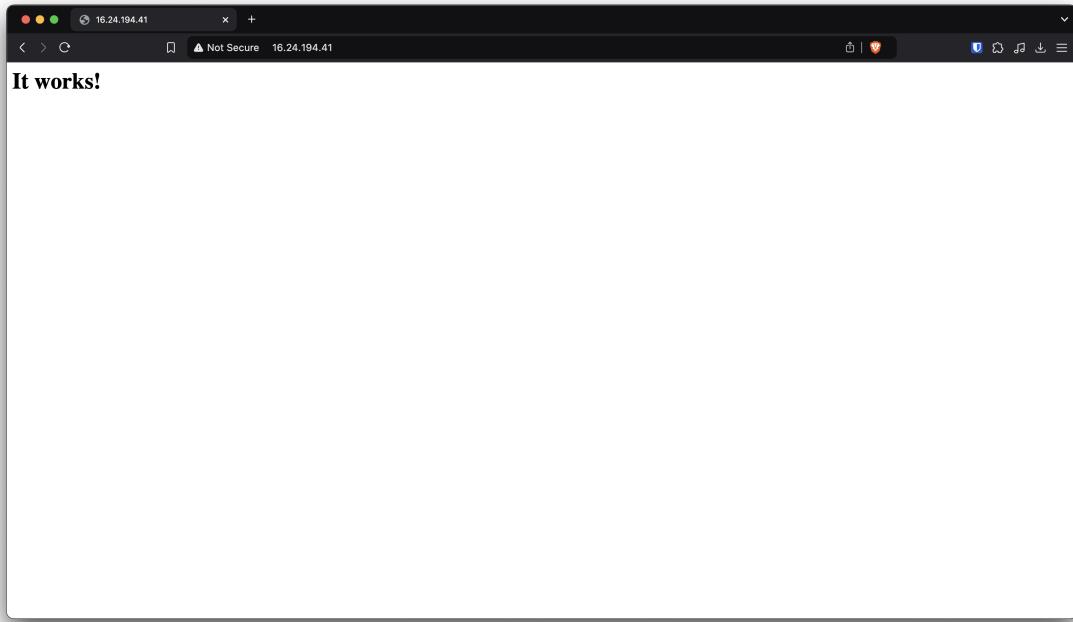


Figure 13: LAMP Web Server - Successfully Installed

A screenshot of a terminal window. The session starts with the command 'groups' which shows the user is part of the adm, wheel, apache, and systemd-journal groups. It then uses 'sudo chown' to change ownership of the /var/www directory to the apache user. Following this, it uses 'sudo chmod' to set the directory permission to 2775 and then recursively finds and changes the permissions of all files within the /var/www directory to 0664. The terminal window also shows tabs for 'Vaults' and 'SFTP'.

```
[ec2-user@ip-172-31-0-52 ~]$ groups
ec2-user adm wheel apache systemd-journal
[ec2-user@ip-172-31-0-52 ~]$ sudo chown -R ec2-user:apache /var/www
[ec2-user@ip-172-31-0-52 ~]$ sudo chmod 2775 /var/www && find /var/www -type d -exec sudo chmod 2775 {} \;
[ec2-user@ip-172-31-0-52 ~]$ find /var/www -type f -exec sudo chmod 0664 {} \;
[ec2-user@ip-172-31-0-52 ~]$
```

Figure 14: LAMP Web Server - Adding ec2-user to apache group with other security practices

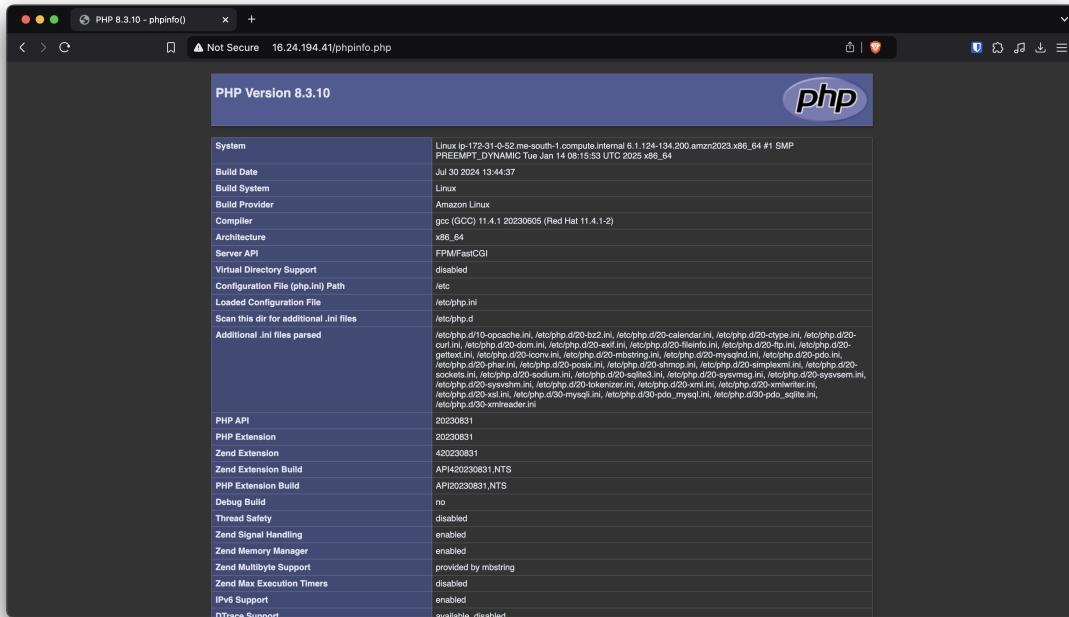


Figure 15: LAMP Web Server - PHP Info Page

```

... Success!

By default, MariaDB comes with a database named 'test' that anyone can
access. This is also intended only for testing, and should be removed
before moving into a production environment.

Remove test database and access to it? [Y/n] Y
- Dropping test database...
... Success!
- Removing privileges on test database...
... Success!

Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

Reload privilege tables now? [Y/n] Y
... Success!

Cleaning up...

All done! If you've completed all of the above steps, your MariaDB
installation should now be secure.

Thanks for using MariaDB!
[ec2-user@ip-172-31-0-52 ~]$ sudo systemctl stop mariadb
[ec2-user@ip-172-31-0-52 ~]$ 

```

Figure 16: LAMP Web Server - MariaDB Secure Setup

## 6 Part F: Connect to EC2 Linux Instance using Termius on Mac or Windows

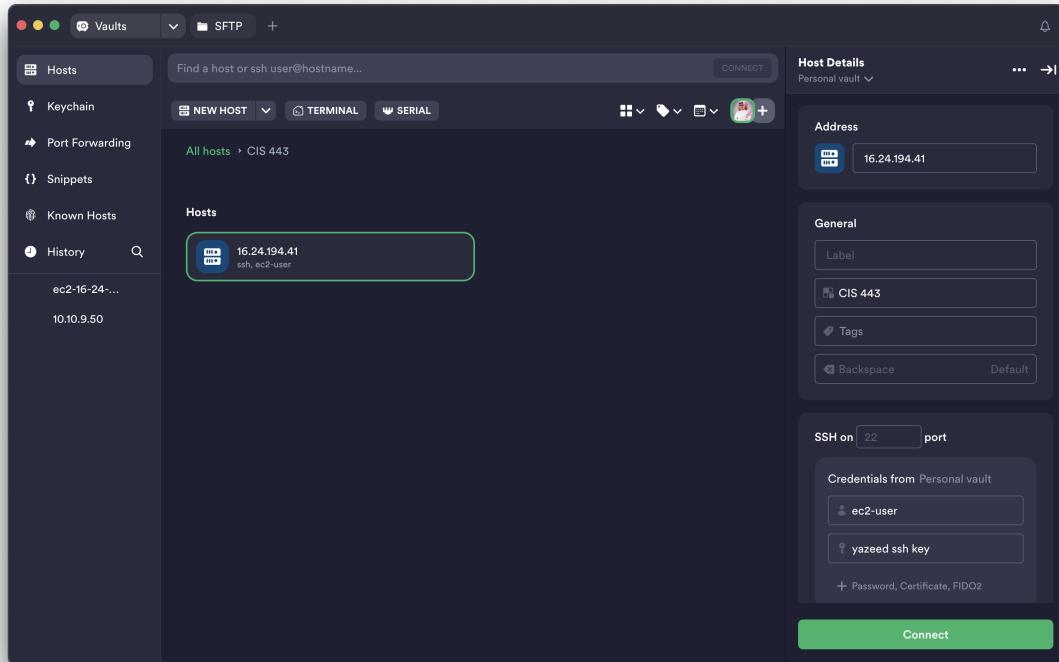


Figure 17: Termius SSH Connection Configuration

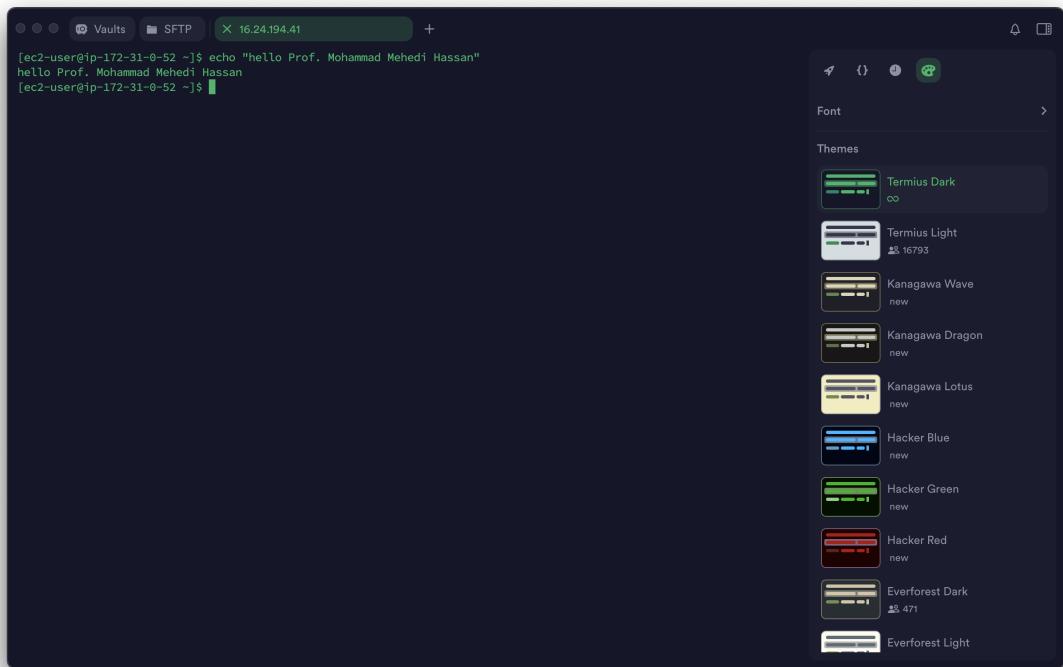


Figure 18: Termius SSH Connected - Saying Hello to Professor