

Placement Empowerment Program

Cloud Computing and DevOps Centre

Set Up a Virtual Machine in the Cloud Create a free-tier AWS account. Launch a virtual machine and SSH into it.

Name: Esly Abro K

Department: IT

Introduction:

The objective of this Proof of Concept (POC) is to explore the process of setting up a virtual machine in the cloud using the AWS Free Tier. A virtual machine (VM) is a crucial component in cloud computing, enabling users to deploy and manage scalable computing resources without requiring physical hardware. This POC serves as a foundational exercise for understanding cloud infrastructure and using AWS EC2 to create a simple and cost-effective computing environment.

Overview:

This POC demonstrates the step-by-step process to:

1. Create a free AWS account.
2. Launch a virtual machine using AWS EC2.
3. Configure and secure the instance with a key pair and a security group.
4. Connect to the VM using SSH from a Windows system.

The project covers basic tasks that are essential for

beginners in cloud computing, offering hands-on experience with AWS infrastructure.

Objectives:

- 1. Learn AWS EC2 Basics:** Understand how to create, configure, and launch an EC2 instance.
- 2. Practice Secure Connections:** Use SSH to securely connect to the instance.
- 3. Gain Practical Experience:** Explore the AWS Management Console to manage and interact with cloud resources.
- 4. Understand Free Tier Usage:** Work within the AWS Free Tier to avoid unnecessary costs.

Importance:

- 1. Foundation for Cloud Computing:** Understanding how to launch and manage virtual machines is a fundamental skill for cloud practitioners.

Skill Development: This POC builds hands-on skills in AWS, including instance management, security configurations, and connecting via SSH.

Scalability and Flexibility: Demonstrates how cloud infrastructure allows for rapid deployment of resources compared to traditional setups.

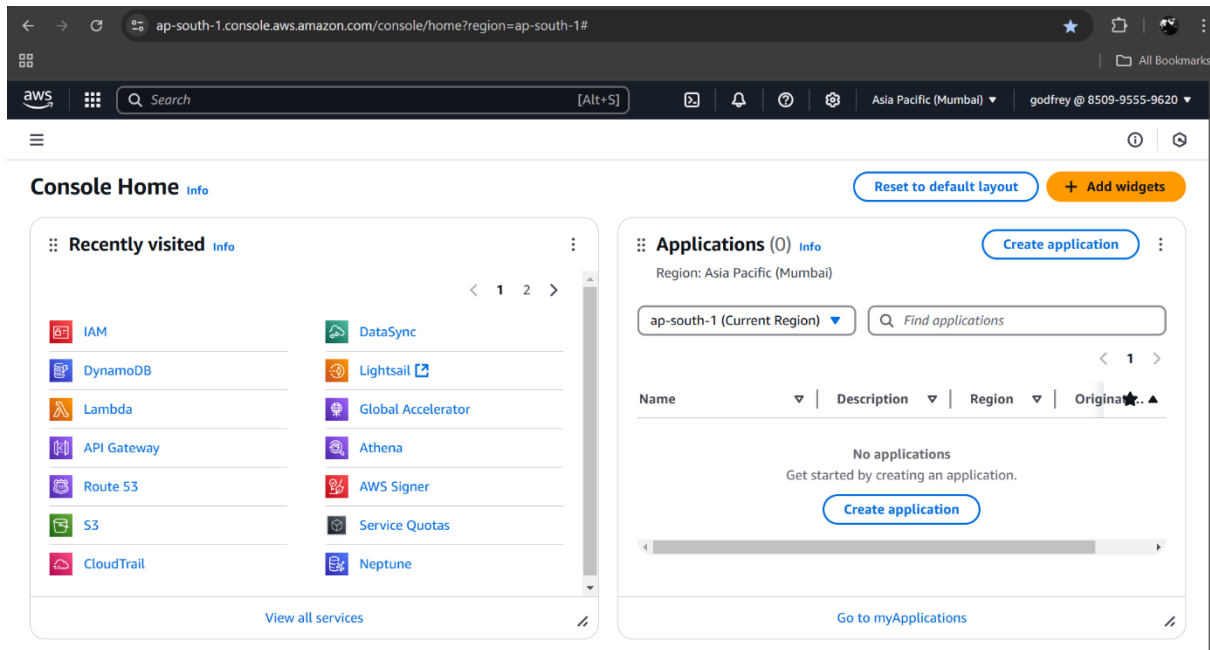
Cost-Effective Learning: Using AWS Free Tier enables users to explore cloud computing without financial investment.

Career Relevance: Knowledge of setting up virtual machines in AWS is highly valuable for careers in IT, cloud computing, and DevOps.

Step-by-Step Overview

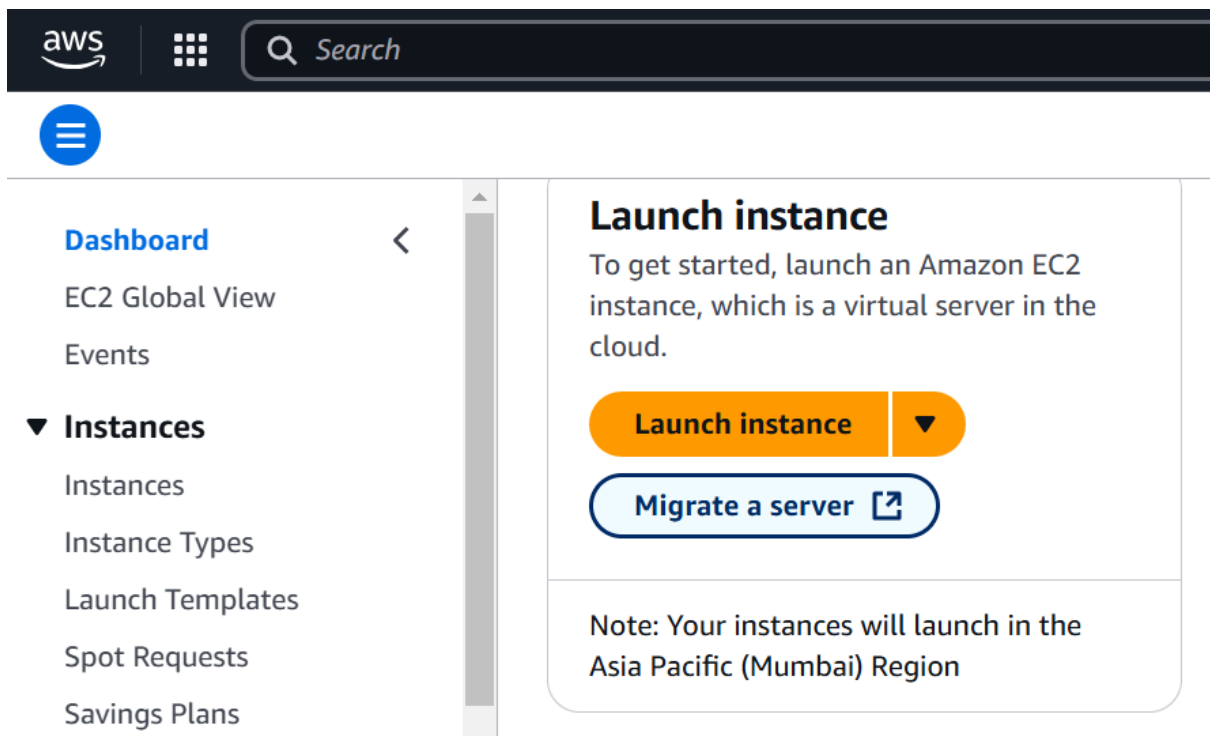
Step 1:

1. Go to [AWS Management Console](#).
2. Enter your username and password to log in.



Step 3:

Search EC2 on the console and Click **Launch Instances**.



Step 4:

1. Choose **Amazon Linux 2023 Free Tier AMI** or **Ubuntu Free Tier AMI**.

2. Select the **t2.micro** instance type (free tier).

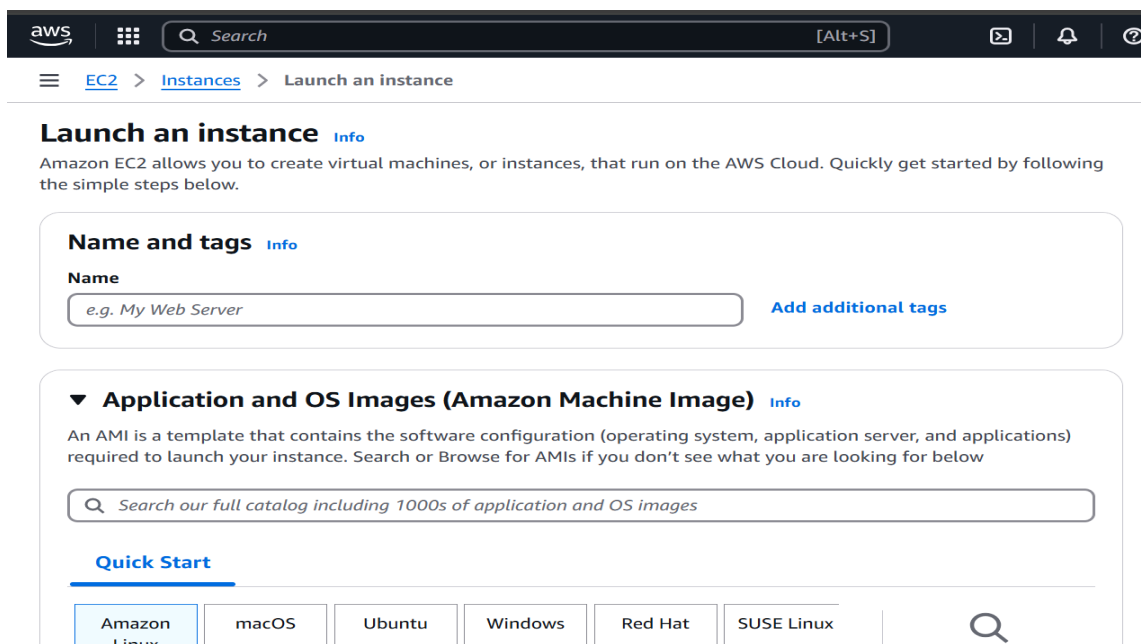
3. Configure security group:

Allow **SSH** (Port 22) from your IP.

4. Add a key pair:

If you don't have one, create a new key pair and download it as a .pem file.

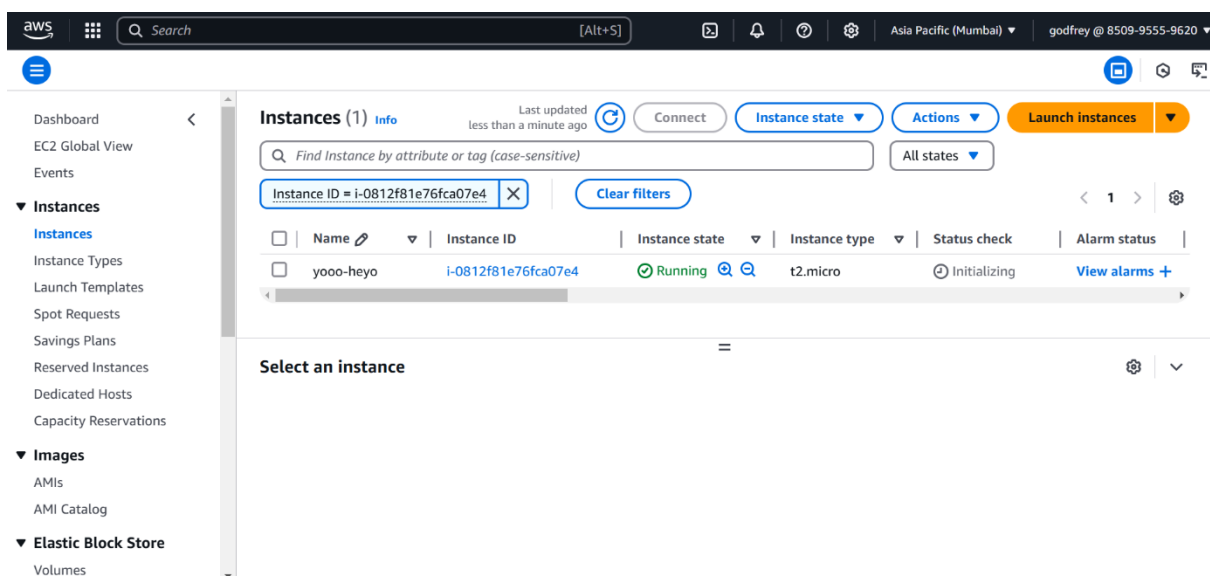
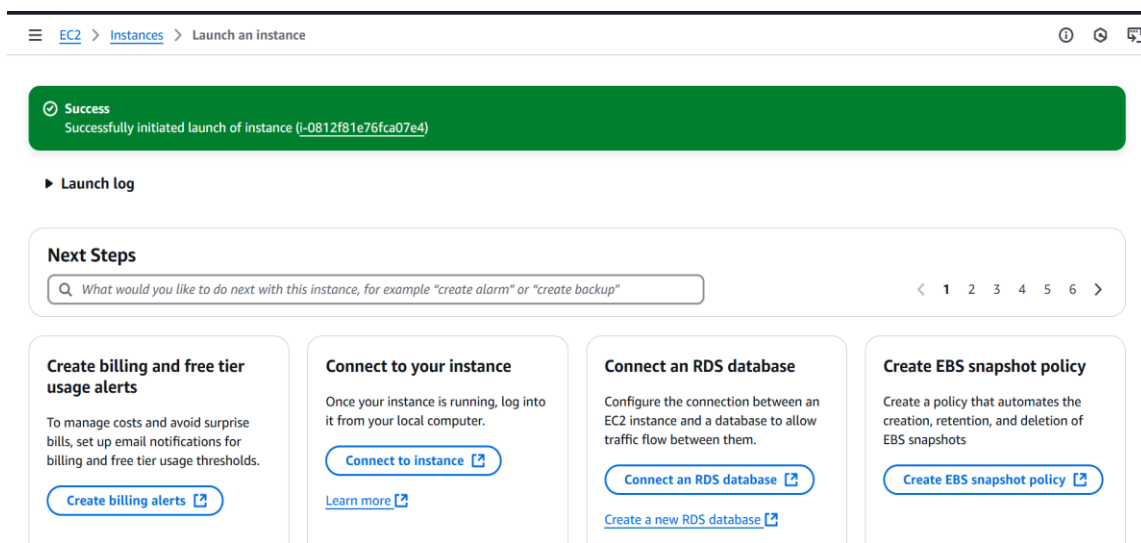
5. Click **Launch Instance**.



The screenshot shows the AWS Management Console interface for launching an instance. At the top is the AWS navigation bar with the logo, a search bar, and navigation icons. Below the navigation bar is a breadcrumb trail: [EC2](#) > [Instances](#) > Launch an instance. The main heading is "Launch an instance" with an "Info" link. Below this is a descriptive paragraph: "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." The first section is "Name and tags" with an "Info" link. It contains a "Name" label and a text input field with the placeholder "e.g. My Web Server". To the right of the input field is a link "Add additional tags". The second section is "Application and OS Images (Amazon Machine Image)" with an "Info" link. It contains a paragraph: "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". Below this paragraph is a search bar with the placeholder "Search our full catalog including 1000s of application and OS images". At the bottom is a "Quick Start" section with a horizontal list of buttons: "Amazon Linux", "macOS", "Ubuntu", "Windows", "Red Hat", and "SUSE Linux". The "Amazon Linux" button is highlighted. To the right of the buttons is a magnifying glass icon.

Step 5:

Check your running instance in the Instances section.
Select your Instance and click the **Connect** Option.



Step 6:

Go to the SSH client section, and copy the command provided under the 'Example' section.

Instance summary for i-0812f81e76fca07e4 (yooo-heyo) [Info](#)

[Connect](#) [Instance state ▼](#) [Actions ▼](#)

Updated less than a minute ago

Instance ID i-0812f81e76fca07e4	Public IPv4 address 43.204.147.231 open address	Private IPv4 addresses 172.31.5.146
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-43-204-147-231.ap-south-1.compute.amazonaws.com open address
Hostname type IP name: ip-172-31-5-146.ap-south-1.compute.internal	Private IP DNS name (IPv4 only) ip-172-31-5-146.ap-south-1.compute.internal	Elastic IP addresses -
Answer private resource DNS name IPv4 (A)	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations.
Auto-assigned IP address 43.204.147.231 [Public IP]	VPC ID vpc-05fb8c7076a11ace7	

[EC2](#) > [Instances](#) > [i-0812f81e76fca07e4](#) > Connect to instance

Connect to your instance i-0812f81e76fca07e4 (yooo-heyo) using any of these options

[EC2 Instance Connect](#) [Session Manager](#) [SSH client](#) [EC2 serial console](#)

Instance ID
[i-0812f81e76fca07e4](#) (yooo-heyo)

1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is godfrey77.pem
3. Run this command, if necessary, to ensure your key is not publicly viewable.
[chmod 400 "godfrey77.pem"](#)
4. Connect to your instance using its Public DNS:
[ec2-43-204-147-231.ap-south-1.compute.amazonaws.com](#)

Example:
[ssh -i "godfrey77.pem" ubuntu@ec2-43-204-147-231.ap-south-1.compute.amazonaws.com](#)

Note: In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.

[Cancel](#)

Step 7:

Open PowerShell, navigate to the Downloads folder. Run the SSH command from the EC2 Connect section, replace the key name with your downloaded key (e.g., new.pem), press Enter, and type yes when prompted.

```
PS C:\Users\Jeffersen Godfrey\downloads> ssh -i "godfrey77.pem" ubuntu@ec2-43-204-147-231.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-43-204-147-231.ap-south-1.compute.amazonaws.com (43.204.147.231)' can't be established.
ED25519 key fingerprint is SHA256:ZW/jG4R0BCr4VjEzGzyVTomK+7iFRN57X43yrKXkkLE.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-43-204-147-231.ap-south-1.compute.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1021-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Thu Jan 30 15:08:07 UTC 2025

System load:  0.09          Processes:            107
Usage of /:   24.9% of 6.71GB Users logged in:        0
Memory usage: 22%          IPv4 address for enX0: 172.31.5.146
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
```

Successfully completed the setup of a virtual machine in AWS.

Outcome:

By completing this PoC of setting up a virtual machine in AWS, you will:

1. Create and configure a free AWS account to use cloud resources within the Free Tier.

2. Launch an EC2 instance with Amazon Linux or Ubuntu as the operating system.
3. Generate and manage a secure key pair for SSH access to your EC2 instance.
4. Configure a security group to allow SSH connections to your instance from your IP address.
5. Successfully connect to the EC2 instance via SSH using the public IP address.
6. Gain hands-on experience with AWS EC2 and foundational cloud computing concepts.