

Cloud & DevOps Integration Project

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To "Deploy a Static Website on AWS using EC2 and S3 with Basic DevOps Concepts"

1. Difference between IaaS, PaaS, and SaaS with one real-life example each.

IaaS – Infrastructure as a Service:

Think of **IaaS** like renting a computer from someone else's data center. You get the machine (virtually), but it's up to you to install the operating system, the software, and keep everything running. It's a great option for people or companies who want full control—like managing their own servers, websites, or databases—but without actually owning the physical hardware.

Example:

Imagine using **Amazon EC2**. You log in, rent a virtual server, and set it up however you like. It's just like using your own computer, but in the cloud.

PaaS – Platform as a Service

PaaS is one step up. Here, you're not renting a blank computer—you're getting a ready-made environment to build apps. It's like someone hands you a fully-equipped workstation where everything is already installed: the tools, the frameworks, the database access. You just write your code and launch your app. It's perfect for developers who want to build and deploy applications without worrying about the nuts and bolts behind the scenes like hardware, networking, or system updates.

Example:

With **Google App Engine**, you just write your app and upload it. Google takes care of the rest—servers, updates, scaling, everything.

SaaS – Software as a Service

SaaS is the easiest of all. You don't need to install or build anything—you just **use the software** through your browser or an app. It's like subscribing to Netflix. You don't host the movies or worry about servers; you just log in and start watching. This model is for people who just want the finished product, like email, document editing, or video calls, without managing anything technical.

Example:

Gmail is a perfect SaaS example. You just open your browser, log in, and send emails. Google handles all the maintenance and security in the background.

2. Briefly describe how DevOps practices align with cloud platforms like AWS, Azure, or GCP.

DevOps is a set of practices that aim to bring together software development (Dev) and IT operations (Ops) to shorten the development cycle and improve the quality of software. Cloud platforms like AWS, Azure, and GCP support DevOps in many ways by providing tools and services that automate processes such as code integration, testing, deployment, and monitoring. For example: • AWS provides tools like AWS CodePipeline and AWS CodeDeploy to automate the process of building, testing, and deploying applications. • Azure offers Azure DevOps, a set of tools that help developers collaborate, build, test, and release software efficiently. • GCP provides services like Cloud Build and Cloud Deployment Manager, which help in continuous integration and continuous delivery (CI/CD). These tools allow developers to work faster and more efficiently, making it easier to integrate new code, deploy software, and monitor applications, all while maintaining the flexibility and scalability that cloud platforms offer.

- **Hands on Activity:**

Step1: Create an AWS Free Tier account (or Azure/GCP if preferred).



Congratulations!

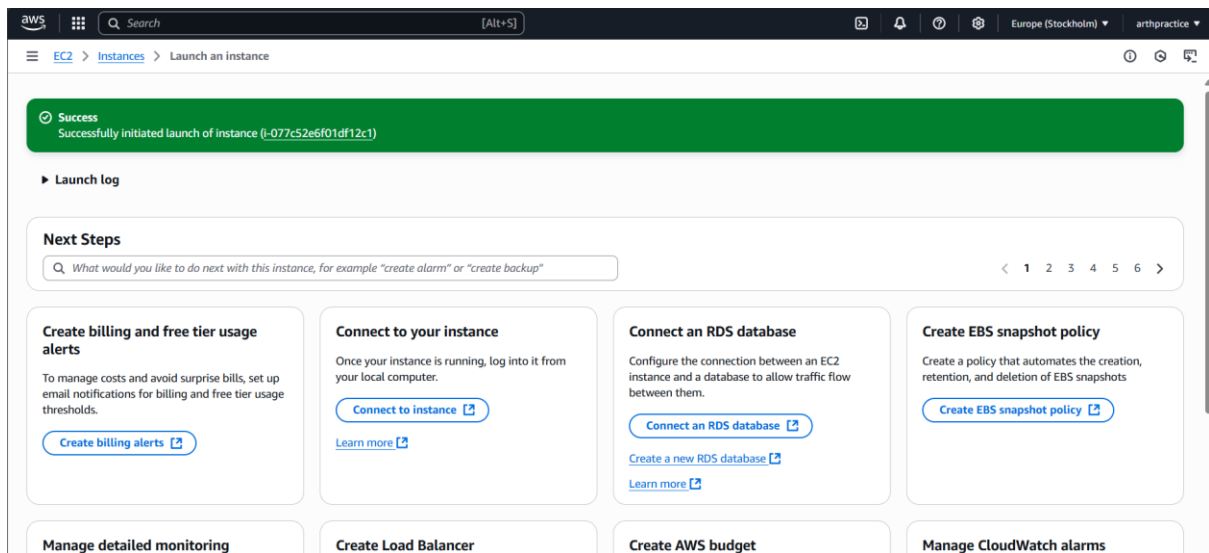
Thank you for signing up with AWS.

We are activating your account, which should take a few minutes. You will receive an email when this is complete.

[Go to the AWS Management Console](#)

[Sign up for another account](#) or [Contact Sales](#)

Step 2: Launch an EC2 instance (Linux/Ubuntu).



Success
Successfully initiated launch of instance (i-077c52e6f01df12c1)

► Launch log

Next Steps

What would you like to do next with this instance, for example "create alarm" or "create backup"

Create billing and free tier usage alerts
To manage costs and avoid surprise bills, set up email notifications for billing and free tier usage thresholds.
[Create billing alerts](#)

Connect to your instance
Once your instance is running, log into it from your local computer.
[Connect to instance](#)
[Learn more](#)

Connect an RDS database
Configure the connection between an EC2 instance and a database to allow traffic flow between them.
[Connect an RDS database](#)
[Create a new RDS database](#)
[Learn more](#)

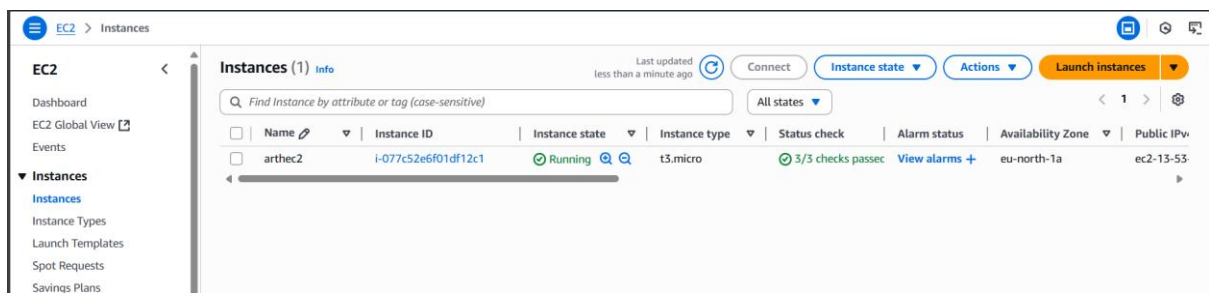
Create EBS snapshot policy
Create a policy that automates the creation, retention, and deletion of EBS snapshots.
[Create EBS snapshot policy](#)

Manage detailed monitoring

Create Load Balancer

Create AWS budget

Manage CloudWatch alarms



EC2 > Instances

Instances (1) Info

Last updated less than a minute ago

Connect Instance state Actions Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
arthec2	i-077c52e6f01df12c1	Running	t3.micro	3/3 checks passed	View alarms	eu-north-1a	ec2-13-53-

Step 3: Upload a simple HTML page (can be a personal portfolio or welcome page) to your EC2 instance.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>My AWS EC2 Website</title>
  <style>
    body {
      background-color: #f5f7fa;
      font-family: Arial, sans-serif;
      text-align: center;
      padding-top: 100px;
    }
    h1 {
      color: #2c3e50;
    }
    p {
      color: #34495e;
    }
  </style>
</head>
<body>
  <h1>🚀 Welcome to My EC2 Web Server!</h1>
  <p>This website is running on an AWS EC2 instance using Apache HTTP Server.</p>
</body>
</html>
```

```

C:\Users\HP>C:\Users\HP\Desktop\awsf\arth-key.pem
C:\Users\HP>ssh -i "C:\Users\HP\Desktop\awsf\arth-key.pem" ubuntu@13.53.173.231
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1024-aws x86_64)

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

System information as of Fri May 30 10:51:35 UTC 2025

System load:  0.08               Temperature:   -273.1 C
Usage of /:   25.0% of 6.71GB    Processes:    106
Memory usage: 22%               Users logged in: 0
Swap usage:   0%                IPv4 address for ens5: 172.31.30.27

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

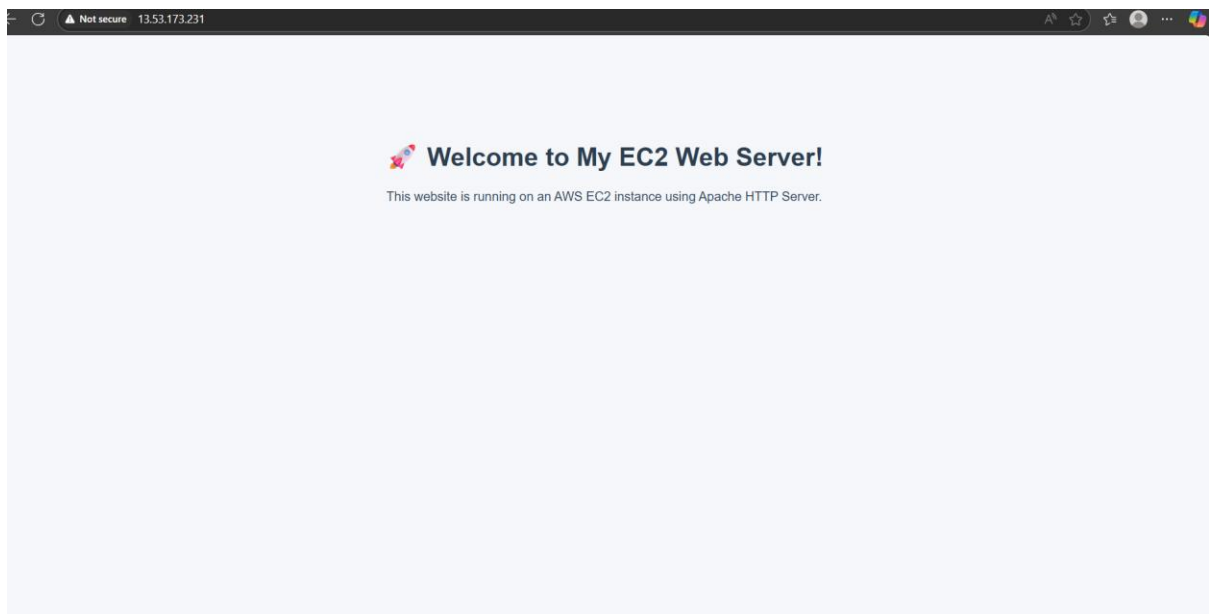
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-30-27:~$ |

```



Step 4: Create an **S3 bucket** and upload any static files (like images or CSS) to be used by your website.

Amazon S3 > Buckets

Successfully created bucket "arth-awsbucket"

To upload files and folders, or to configure additional bucket settings, choose [View details](#).

Account snapshot - updated every 24 hours

All AWS Regions

Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. [Learn more](#)

[View Storage Lens dashboard](#)

General purpose buckets

Directory buckets

General purpose buckets (1)

Info

All AWS Regions

Buckets are containers for data stored in S3.

Find buckets by name

Copy ARN

Empty

Delete

Create bucket

< 1 >

Name	AWS Region	IAM Access Analyzer	Creation date
arth-awsbucket	Europe (Stockholm) eu-north-1	View analyzer for eu-north-1	May 30, 2025, 17:02:55 (UTC+05:30)

Upload succeeded

For more information, see the [Files and folders](#) table.

[Close](#)

Upload: status

After you navigate away from this page, the following information is no longer available.

Summary

Destination

[s3://arth-awsbucket](#)

Succeeded

1 file, 367.0 KB (100.00%)

Failed

0 files, 0 B (0%)

Files and folders

Configuration


Files and folders (1 total, 367.0 KB)

Find by name


< 1 >

Name	Folder	Type	Size	Status	Error
fake_000001....	-	image/jpeg	367.0 KB	Succeeded	-

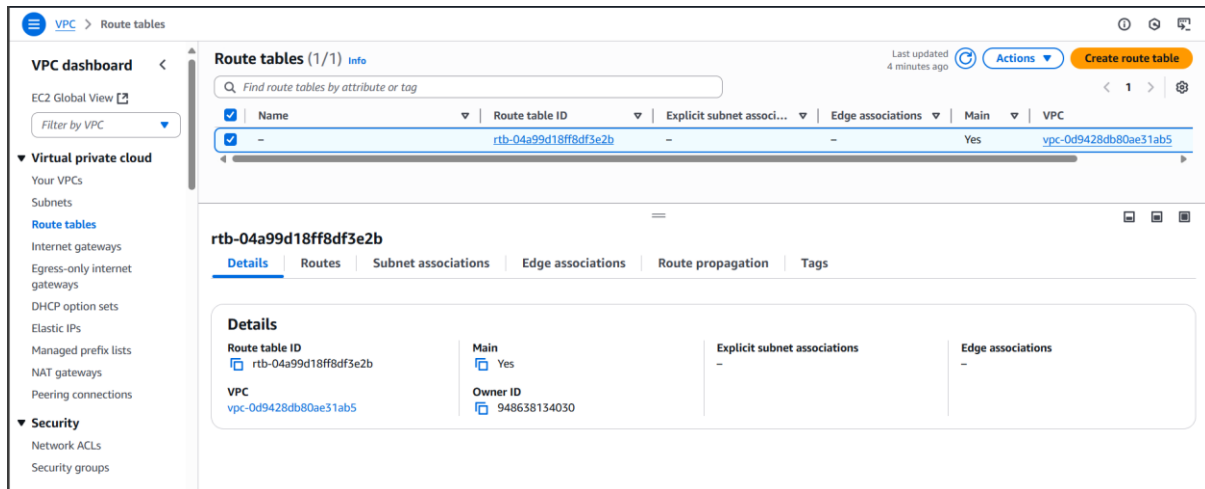
Not secure 13.53.173.231

 **Welcome to My EC2 Web Server!**

This website is running on an AWS EC2 instance using Apache HTTP Server.



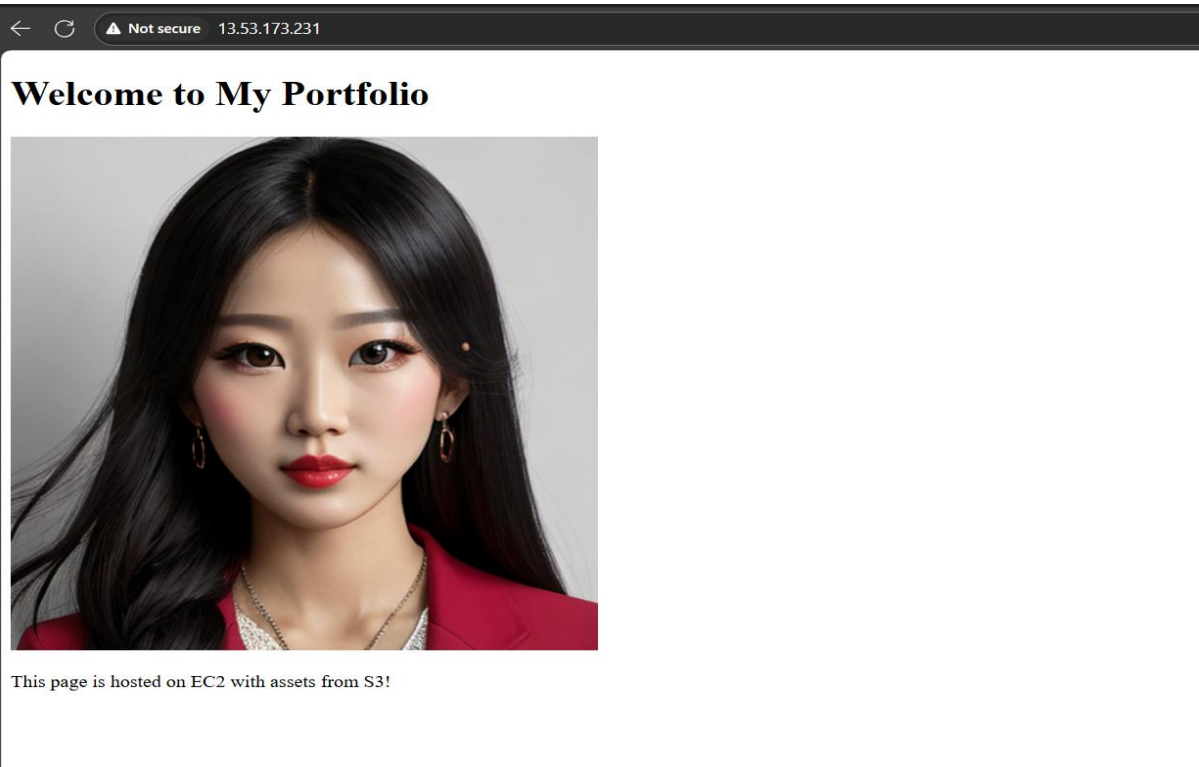
Step 5: Configure VPC and subnet settings to allow internet access to your EC2 instance.



Step 6: Connect the EC2 and S3 components (ensure the HTML page references the S3 files).

```
GNU nano 7.2 /var/www/html/index.html
client_loop: send disconnect: Connection reset
PS C:\Users\HP> |
<head>
  <title>My Portfolio</title>
  <link rel="stylesheet" href="https://arth-awsbucket.s3.amazonaws.com/style.css">
</head>
<body>
  <h1>Welcome to My Portfolio</h1>
  
  <p>This page is hosted on EC2 with assets from S3!</p>
</body>
</html>
```

Final Website:



Public IP of website:

<http://13.53.173.231/>