# Extra Project: AWS Single-Cloud Deployment with Terraform

## Introduction

This additional project focuses exclusively on provisioning infrastructure in AWS using Terraform. It highlights Infrastructure as Code (IaC) practices to automate the deployment of an EC2 instance running an NGINX web server.

## Abstract

Terraform configurations were written to set up an Ubuntu EC2 instance, install NGINX automatically using user_data, and output the public IP address for easy access. This project reinforced single-cloud automation practices and demonstrated reproducible AWS deployments.

## Tools Used

Terraform v1.9.5+, AWS CLI, EC2 (t2.micro), NGINX Web Server, Security Groups

## Steps Involved

1. Defined AWS provider and authentication in Terraform.
2. Created infrastructure resources including VPC, subnets, and security groups.
3. Provisioned an EC2 instance running Ubuntu 22.04.
4. Configured NGINX installation through user_data.
5. Applied infrastructure using `terraform init`, `terraform plan`, and `terraform apply`.
6. Retrieved public IP using Terraform outputs.
7. Validated by visiting `http://` to see the NGINX Welcome Page.
8. Cleaned up resources using `terraform destroy`.

## Conclusion

The project highlighted the effectiveness of Terraform in AWS IaC automation. It provided hands-on experience in provisioning cloud infrastructure and demonstrated the ability to deploy web applications quickly and securely.