# **Lab Exercise 9-** **Leveraging GitHub Copilot for Secure Terraform Development on AWS**

**Objective:**

Learn how to:

1. **Generate Terraform scripts** for provisioning an **EC2 instance** and an **S3 bucket**.
2. **Use GitHub Copilot Chat** to create and refine the Terraform configuration.
3. **Deploy the infrastructure** to **AWS (us-east-1 region)**.

**Prerequisites:**

* **GitHub Copilot Chat** enabled in **VS Code**.
* **AWS CLI** installed and configured with IAM permissions.
* **Terraform installed** (latest version).
* **Basic knowledge of Terraform syntax**.

**Step 1: Create Terraform Configuration Files**

**Step 2: Define the Provider**

Create a new main.tf file and add the following:

Generate a Terraform configuration that:

* Uses the AWS provider (hashicorp/aws) with version 5.83.1.
* Sets the region to us-east-1.
* Uses secure Terraform variables for access\_key and secret\_key.
* Provides default values for access\_key and secret\_key as "".

**Step 3: Create an EC2 Instance**

**3.1 Define an EC2 Instance in instance.tf**

Ask Copilot:

Generate a Terraform configuration (instance.tf) to create a simple EC2 instance on AWS.

* Use an official ubuntu AMI.
* Create an EC2 instance with t2.micro instance type.
* Follow Terraform best practices, using variables where applicable.

**Step 4: Create an S3 Bucket**

**4.1 Define an S3 Bucket in bucket.tf**

Ask Copilot:

Generate a Terraform configuration (bucket.tf) to create a simple S3 bucket on AWS.

* Bucket-name “pluralsight-hks-s3-bucket”
* Follow Terraform best practices, using variables where applicable.

**Step 6: Deploy the Infrastructure (deploy.bat)**

Ask Copilot:

@echo off

echo Initializing Terraform...

terraform init

echo Terraform initialized.

echo terraform plan...

terraform plan

echo Terraform plan complete.

echo Applying Terraform...

terraform apply -auto-approve

echo Terraform applied.

echo Terraform setup complete.

**Step 6: Deploy the Infrastructure (deploy.bat)**

Run deploy.bat on terminal

**Conclusion**

* **Used GitHub Copilot Chat** to generate **Terraform scripts**.
* **Provisioned an EC2 instance** and **S3 bucket** in **us-east-1**.
* **Deployed the infrastructure** using terraform apply.
* **Learned to modify, explain, and destroy resources**.

By following this lab, you will **automate AWS infrastructure** using **Terraform and GitHub Copilot Chat**!