COURSE TABLE OF CONTENTS

# Terraform on AWS and GCP

OEM: HashiCorp • Duration: 3 Days (24 hrs)

## COURSE MODULES & TOPICS

### Module 1: Introduction to IaC and Terraform

- Understanding Infrastructure as Code (IaC)
- Benefits of IaC for AWS infrastructure management
- Overview of Terraform and HashiCorp ecosystem
- Terraform vs AWS CloudFormation
- AWS IAM roles and permissions for Terraform usage

### Module 2: Setting Up the Environment

- Installing Terraform CLI
- Configuring AWS CLI and credentials
- Setting up AWS IAM users and policies for Terraform
- Authenticating Terraform with AWS
- Initializing and validating Terraform configurations

### Module 3: Terraform Basics

- Terraform configuration file structure
- Resources and Providers
- Variables and Outputs
- Data sources and local values
- Terraform CLI commands: init, plan, apply, destroy

### Module 4: State Management

- Understanding Terraform state
- Backend configuration (local and remote)
- Locking and state file security
- State manipulation (terraform state commands)
- Using Amazon S3 and DynamoDB for remote state and locking

### Module 5: Deploying AWS Core Services with Terraform

- EC2 instances and AMIs
- VPC, Subnets, Route Tables
- S3 buckets and lifecycle policies
- RDS
- IAM roles, users, policies, and instance profiles
- Elastic Load Balancers
- Auto Scaling Groups

### Module 6: Advanced Terraform Features

- Modules: creating and using reusable modules
- Resource dependencies and lifecycle customizations
- Terraform built-in functions and expressions
- Conditional logic and loops (for_each, count)

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### Module 7: Terraform Workspaces and Environments

- Using workspaces for environment isolation
- Managing dev/staging/prod infrastructure
- Environment-specific variables and secrets

### Module 8: Security, Governance, and Best Practices

- Managing secrets using AWS Secrets Manager
- IAM best practices for Terraform execution
- Policy-as-code with AWS Organizations and SCPs

### Module 9: Troubleshooting and Debugging

- Debug logs and verbosity levels
- Common errors in AWS provider and how to resolve them
- Debugging permission and resource issues

### Module 10: Capstone Project and Labs

- End-to-end infrastructure deployment for a 3-tier web app
- Hands-on with networking, compute, storage, and security
- Collaboration using Terraform modules and remote state
- Importing existing AWS infrastructure using terraform import