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# **GCP TERRAFORM**

## **Module 1: Introduction to Google Cloud Platform and Terraform**

- 1.1. Overview of GCP and Terraform
- 1.2. Why Use Terraform with GCP?
- 1.3. Setting Up Your Development Environment

## **Module 2: Terraform Basics**

- 2.1. Terraform Installation and Configuration
- 2.2. Understanding Terraform Configuration Files (.tf)
- 2.3. Provisioning Resources with Terraform
- 2.4. Managing State with Terraform

## **Module 3: GCP Fundamentals**

- 3.1. Overview of Google Cloud Platform Services
- 3.2. Creating a GCP Account and Project
- 3.3. Understanding GCP Resource Hierarchy

## **Module 4: Authenticating Terraform with GCP**

- 4.1. Service Account Setup
- 4.2. Authentication Methods in Terraform

## **Module 5: Managing GCP Compute Resources**

- 5.1. Provisioning VM Instances
- 5.2. Customizing VMs with Machine Types and Images
- 5.3. Managing Instance Groups and Load Balancers



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## **Module 6: Managing GCP Networking Resources**

- 6.1. VPCs and Subnets
- 6.2. Firewall Rules
- 6.3. Cloud Router and VPN Configuration

## **Module 7: Data Storage in GCP**

- 7.1. Cloud Storage Buckets
- 7.2. Cloud SQL Databases
- 7.3. Bigtable and Datastore

## **Module 8: Infrastructure as Code Best Practices**

- 8.1. Module Organization and Reusability
- 8.2. Terraform Variables and Outputs
- 8.3. Terraform Workspaces

## **Module 9: Managing GCP Services with Terraform**

- 9.1. Configuring IAM and Permissions
- 9.2. Managing Pub/Sub Topics and Subscriptions
- 9.3. Creating and Managing Cloud Functions

## **Module 10: Advanced Terraform and GCP Integration**

- 10.1. Remote State Management
- 10.2. Terraform Cloud and Workspaces
- 10.3. Terraform Providers for GCP

## **Module 11: Infrastructure Testing and Continuous Deployment**

- 11.1. Unit Testing Terraform Code



- 11.2. Integration Testing with Terratest
- 11.3. Continuous Deployment Pipelines

## **Module 12: Security and Compliance**

- 12.1. Security Best Practices in GCP
- 12.2. Compliance and Auditing
- 12.3. Terraform Enterprise Security Features

## **Module 13: Monitoring and Debugging**

- 13.1. Monitoring GCP Resources with Stackdriver
- 13.2. Troubleshooting Terraform Deployments
- 13.3. Logging and Error Handling

## **Module 14: Scaling and Optimization**

- 14.1. Auto-scaling Strategies
- 14.2. Cost Optimization with GCP and Terraform
- 14.3. Performance Tuning

## **Module 15: Case Studies and Real-World Projects**

- 15.1. Case Study: Deploying a Multi-tier Web Application
- 15.2. Case Study: Setting up a Data Analytics Pipeline
- 15.3. Project: Building a Production-Ready Infrastructure

## **Module 16: Course Conclusion and Next Steps**

- 16.1. Recap of Key Concepts
- 16.2. Certifications and Further Learning
- 16.3. Community and Resources

