AZURE TERRAFORM

Module 1: Introduction to Azure and Terraform

1.1 Introduction to Azure Cloud
1.1.1 Azure services and offerings
1.1.2 Azure regions and availability zones

1.2 Introduction to Terraform
1.2.1 What is Infrastructure as Code (IaC)?
1.2.2 Terraform vs. other IaC tools

1.3 Setting up your development environment
1.3.1 Installing Terraform
1.3.2 Azure CLI installation and configuration
1.3.3 Authentication and access control

Module 2: Terraform Basics

2.1 Terraform Configuration Language (HCL)
2.1.1 Variables and data types
2.1.2 Resources and providers
2.1.3 Modules and templates

2.2 Creating your first Terraform configuration
2.2.1 Writing and validating HCL
2.2.2 Initializing and planning infrastructure

Module 3: Managing Azure Resources with Terraform

3.1 Azure Resource Providers in Terraform
3.1.1 AzureRM provider
3.1.2 AzureAD provider

3.2 Provisioning Azure Resources
3.2.1 Virtual machines
3.2.2 Storage accounts
3.2.3 Virtual networks

3.3 Resource Lifecycle Management
3.3.1 Creating, updating, and deleting resources
3.3.2 Resource dependencies and ordering

Module 4: Advanced Terraform Techniques

4.1 Terraform State Management
4.1.1 Remote state storage
4.1.2 Locking and concurrency

4.2 Working with Modules
4.2.1 Creating and using custom modules
4.2.2 Module variables and outputs

4.3 Terraform Workspaces
4.3.1 Environment isolation and management
4.3.2 State per workspace

Module 5: Best Practices and Collaboration

5.1 Terraform Code Organization
5.1.1 Folder structure
5.1.2 Naming conventions

5.2 Terraform Version Control
5.2.1 Git and version control workflows
5.2.2 Collaborative development

5.3 Terraform Continuous Integration/Continuous Deployment (CI/CD)
5.3.1 Azure DevOps integration
5.3.2 GitHub Actions for Terraform

Module 6: Terraform in Production

6.1 Scalability and High Availability
6.1.1 Load balancing
6.1.2 Auto-scaling

6.2 Monitoring and Logging
6.2.1 Azure Monitor
6.2.2 Application Insights

6.3 Infrastructure as Code Governance
6.3.1 Azure Policy and Blueprints
6.3.2 Role-based access control (RBAC)

Module 7: Terraform Troubleshooting and Optimization

7.1 Debugging Terraform Issues
7.1.1 Terraform commands for troubleshooting
7.1.2 Common error messages and resolutions

7.2 Performance Optimization
7.2.1 Reducing infrastructure costs
7.2.2 Optimizing Terraform execution times

Module 8: Case Studies and Real-World Projects

8.1 Building a Multi-Tier Web Application
8.2 Deploying a Microservices Architecture
8.3 Infrastructure Migration to Azure with Terraform

Module 9: Certification and Conclusion

9.1 Preparing for Azure and Terraform certifications
9.2 Course Conclusion and Next Steps