Training: Google Cloud
Getting Started with Terraform for Google Cloud

Google Cloud

TRAINING GOALS:

This course provides an introduction to using Terraform for Google Cloud. It enables learners to describe how Terraform can be used to implement infrastructure as a code and to apply some of its key features and functionalities to create and manage Google Cloud infrastructure. Learners will get hands-on practice building Google Cloud resources using Terraform.

What you'll learn

- Define the business need for infrastructure as code and the benefits of using it in your environment.
- Explain the features and functionalities of Terraform.
- Use Terraform resources, variables, and output values to create Google Cloud infrastructure resources.
- Use Terraform modules to build reusable configurations.
- Explain Terraform state and its importance.

Audience

Cloud engineers, DevOps engineers, and individuals who want to start using Terraform to automate infrastructure provisioning with a focus on Google Cloud Platform

CONSPECT:

- Module 1 - Introduction to Terraform for Google Cloud
  - Topics
    - Introduction to IaC
      - What is infrastructure as code (IaC)?
      - Problems IaC can solve
      - Benefits of IaC
      - Provisioning versus configuration
      - Imperative versus declarative approach

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- Introduction to Terraform
  - Terraform overview
  - Terraform features
  - IaC configuration workflow
  - Terraform use cases
- Using Terraform
  - How to use Terraform
  - Running Terraform in production
  - Installing Terraform
  - Authentication for Google Cloud

- Objectives
  - Define infrastructure as code.
  - Explain the features and benefits of using Terraform.
  - Explain the use case of Terraform for Google Cloud.
  - Describe how to use Terraform for Google Cloud.
- Activities
  - 1 quiz

- Module 2 - Terms and concepts
  - Topics
    - The Author phase
      - Terraform Directory structure
      - Introduction to HCL syntax
      - Resources
      - Variables
      - State
      - Modules
    - Terraform commands
      - terraform init
      - terraform plan
      - terraform apply
      - terraform fmt
      - terraform destroy
    - Terraform Validator tool
      - Introduction
      - Why use the Terraform Validator tool
      - Validation workflow

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        - Terraform Validator use cases
    - Objectives
        - Explain the Terraform workflow.
        - Create basic configuration files within Terraform.
        - Explain the purpose of a few Terraform commands.
        - Describe the Terraform Validator tool.
        - Create, update, and destroy Google Cloud resources using Terraform.
    - Activities
        - 1 lab
        - 1 quiz
- Module 3 - Writing Infrastructure Code for Google Cloud
    - Topics
        - Introduction to Resources
            - Resources overview
            - Syntax
            - Example
            - Refer a resource attribute
        - Considerations to define a resource block
        - Meta-arguments for resources
        - Resource dependencies
            - Implicit dependency
            - Explicit dependency
        - Introduction to Variables
            - Overview
            - Syntax to declare a variable
            - Syntax to reference and assign a value to a variable
            - Variables best practices
        - Introduction to output values
            - Output values overview
            - Best practices
        - Terraform Registry and CFT
            - Introduction to Terraform Registry
            - Introduction to CFT
    - Objectives
        - Declare the resources within Terraform.
        - Explain implicit and explicit resource dependencies.

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- Use variables and output values within the root configuration.
- Explain Terraform Registry and Cloud Foundation Toolkit.

- Activities
  - 1 lab
  - 1 quiz

- Module 4 - Organizing and Reusing Configuration with Terraform Modules
  - Topics
    - Introduction to modules:
      - Why are modules needed
      - What is a module?
      - Example
    - Reusing configurations by using modules
      - Module sources
      - Calling a module into the source configuration
    - Using variables to parameterize your configuration
    - Pass resource attributes using output variables
    - Module use cases, benefits, and best practices
  - Objectives
    - Define Terraform modules.
    - Use modules to reuse configurations.
    - Use modules from the public registry.
    - Use input variables to parameterize configurations.
    - Use output values to access resource attributes outside the module.
  - Activities
    - 1 lab
    - 1 quiz

- Module 5 - Introduction to Terraform State
  - Topics
    - Introduction to Terraform state
      - How information is stored in a Terraform state file
    - Ways to save a state file
    - Storing a state file in a Cloud Storage bucket
      - Issues when storing the Terraform state locally
      - Benefits of storing a state file in a Cloud Storage bucket
      - Process of storing a Terraform state file remotely in a Cloud Storage bucket
    - Terraform state best practices

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- Objectives
  - Define Terraform state.
  - List the benefits of storing the state file remotely.
  - Explain how to store the Terraform state in a Cloud Storage bucket.
  - Explain Terraform state best practices.
- Activities
  - 1 lab
  - 1 quiz

REQUIREMENTS:

To get the most out of this course, participants should:

- Complete Google Cloud Fundamentals: Core Infrastructure
- Have basic programming skills and familiarity with using CLI
- Have general familiarity with Google Cloud

Difficulty level



CERTIFICATE:

The participants will obtain certificates signed by Google Cloud Platform.

TRAINER:

Authorized Google Cloud Platform Trainer.

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