Developing Applications with Google Cloud Platform

Table of Content

Module 1: Best Practices for Application Development

Code and environment management

Design and development of secure, scalable, reliable, loosely coupled application components and microservices

Continuous integration and delivery

Re-architecting applications for the cloud

Module 2: Google Cloud Client Libraries, Google Cloud SDK, and Google Firebase SDK

How to set up and use Google Cloud Client Libraries, Google Cloud SDK, and Google Firebase SDK

Lab: Set up Google Client Libraries, Google Cloud SDK, and Firebase SDK on a Linux instance and set up application credentials

Module 3: Overview of Data Storage Options

Overview of options to store application data

Use cases for Google Cloud Storage, Google Cloud Datastore, Cloud Bigtable, Google Cloud SQL, and Cloud Spanner

Module 4: Best Practices for Using Cloud Datastore

Best practices related to the following:

Queries

Built-in and composite indexes

Inserting and deleting data (batch operations)

Transactions

Error handling

Bulk-loading data into Cloud Datastore by using Google Cloud Dataflow

Lab: Store application data in Cloud Datastore

Module 5: Performing Operations on Buckets and Objects

Operations that can be performed on buckets and objects

Consistency model

Error handling

Module 6: Best Practices for Using Cloud Storage

Naming buckets for static websites and other uses

Naming objects (from an access distribution perspective)

Performance considerations

Setting up and debugging a CORS configuration on a bucket

Lab: Store files in Cloud Storage

Module 7: Handling Authentication and Authorization

Cloud Identity and Access Management (IAM) roles and service accounts

User authentication by using Firebase Authentication

User authentication and authorization by using Cloud Identity-Aware Proxy

Lab: Authenticate users by using Firebase Authentication

Module 8: Using Google Cloud Pub/Sub to Integrate Components of Your Application

Topics, publishers, and subscribers

Pull and push subscriptions

Use cases for Cloud Pub/Sub

Lab: Develop a backend service to process messages in a message queue

Module 9: Adding Intelligence to Your Application

Overview of pre-trained machine learning APIs such as Cloud Vision API and Cloud Natural Language Processing API

Module 10: Using Cloud Functions for Event-Driven Processing

Key concepts such as triggers, background functions, HTTP functions

Use cases

Developing and deploying functions

Logging, error reporting, and monitoring

Module 11: Managing APIs with Google Cloud Endpoints

Open API deployment configuration

Lab: Deploy an API for your application

Module 12: Deploying an Application by Using Google Cloud Build, Google Cloud Container Registry, and Google Cloud Deployment Manager

Creating and storing container images

Repeatable deployments with deployment configuration and templates

Lab: Use Deployment Manager to deploy a web application into Google App Engine flexible environment test and production environments

Module 13: Execution Environments for Your Application

Considerations for choosing an execution environment for your application or service:

Google Compute Engine

Kubernetes Engine

App Engine flexible environment

Cloud Functions

Cloud Dataflow

Lab: Deploying your application on App Engine flexible environment

Module 14: Debugging, Monitoring, and Tuning Performance by Using Google Stackdriver

Stackdriver Debugger

Stackdriver Error Reporting

Lab: Debugging an application error by using Stackdriver Debugger and Error Reporting

Stackdriver Logging

Key concepts related to Stackdriver Trace and Stackdriver Monitoring.

Lab: Use Stackdriver Monitoring and Stackdriver Trace to trace a request across services, observe, and optimize performance