GCPDev

Developing Applications with Google Cloud

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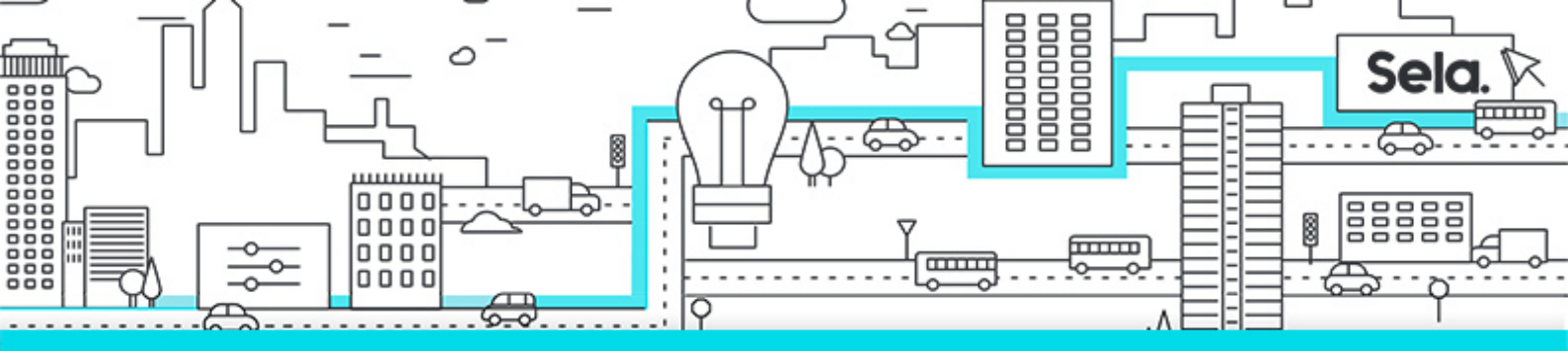


Developing Applications with Google Cloud

GCPDev - Version: 1

3 days course

Description:

Learn how to design, develop, and deploy applications that seamlessly integrate components from the Google Cloud ecosystem. This course uses lectures, demos, and hands-on labs to show you how to use Google Cloud services and pre-trained machine learning APIs to build secure, scalable, and intelligent cloud-native applications.

Intended Audience:

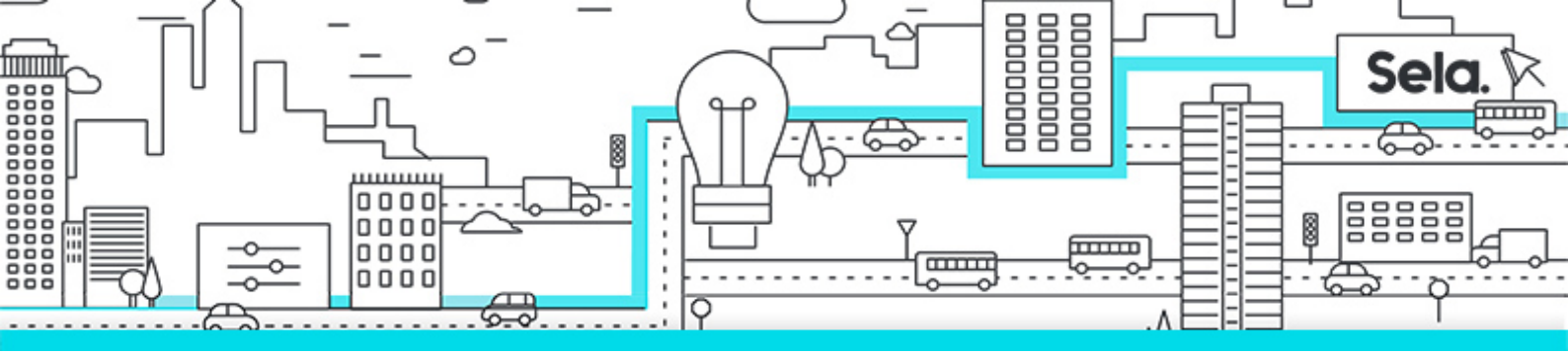
Application developers who want to build cloud-native applications or redesign existing applications that will run on Google Cloud Platform

Prerequisites:

• Completed Google Cloud Fundamentals or have equivalent experience; Working knowledge of Node.js, Java, or Python; Basic proficiency with command-line tools and Linux operating system environments.

Objectives:

• Describe best practices for cloud-native application development
• Differentiate between data storage options for various types of application data
• Implement a solution for storing non-relational application data in Datastore
• Implement storage solution for objects (binary and large files) using Cloud Storage

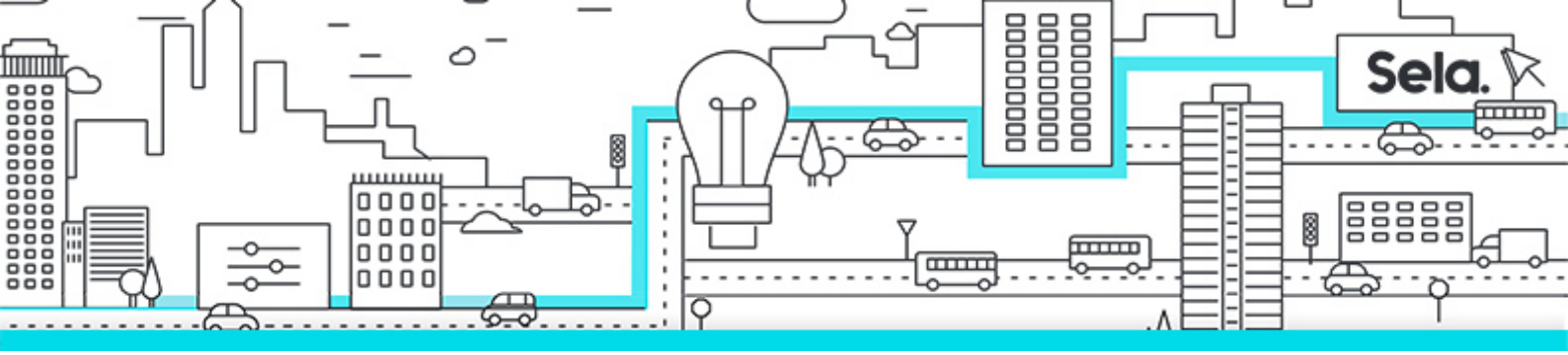


Topics:

- **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
  - Objectives
  - Activities

- **Overview of Data Storage Options**
  - • Overview of options to store application data
  - • Use cases for Cloud Storage, Firestore, Cloud Bigtable, Cloud SQL,
  - and Cloud Spanner
  - • Demo: Connecting Securely to a Cloud SQL Database
  - Objectives
  - Activities

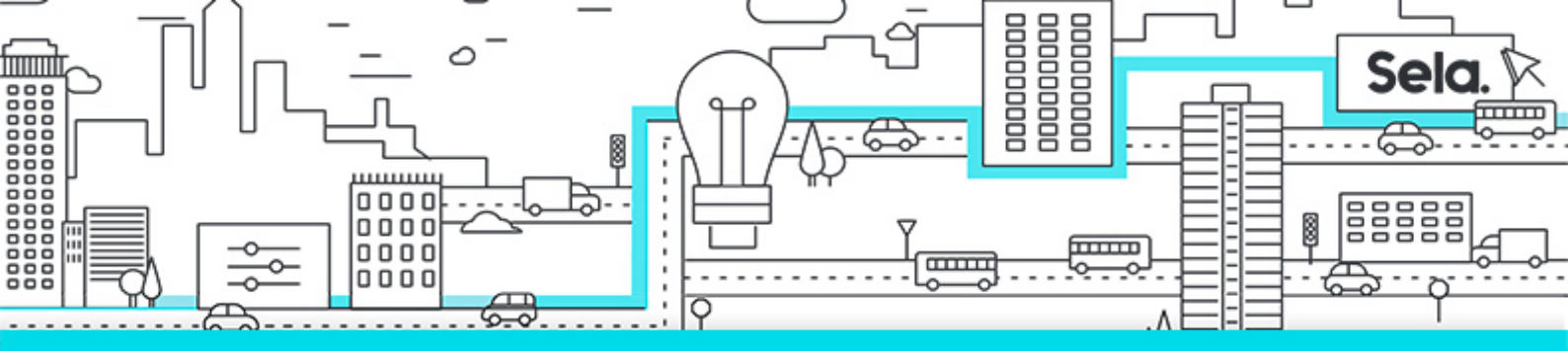
- **Best Practices for Using Datastore**
  - • Best practices related to using Firestore in Datastore mode for:
  - • Queries
  - • Built-in and composite indexes
  - • Inserting and deleting data (batch operations)
  - • Transactions
  - • Error handling
  - • Demo: Explore Datastore
  - • Demo: Use Dataflow to Bulk-load Data into Datastore
  - • Lab: Storing Application Data in Datastore
  - Objectives
  - Activities.



- **Performing Operations on Buckets and Objects**
  - • Cloud Storage concepts
  - • Consistency model
  - • Demo: Explore Cloud Storage
  - • Request endpoints
  - • Composite objects and parallel uploads
  - • Truncated exponential backoff
  - • Demo: Enable CORS Configuration in Cloud Storage
  - • Understand Cloud Storage concepts.
  - • Differentiate between strongly consistent and eventually consistent operations.
  - • Access Cloud Storage through request endpoints.
  - • Use object composition to upload an object in parallel.
  - • Use truncated exponential backoff to deal with network failures.
  - Objectives
  - Activities

- **Best Practices for Using Cloud Storage**
  - • Naming buckets for static websites and other uses
  - • Naming objects (from an access distribution perspective)
  - • Performance considerations
  - • Lab: Storing Image and Video Files in Cloud Storage
  - Objectives
  - Activities

- **Handling Authentication and Authorization**
  - • Identity and Access Management (IAM) roles and service accounts
  - • User authentication by using Firebase Authentication
  - • User authentication and authorization by using Identity-Aware Proxy
  - • Lab: Adding User Authentication to your Application
  - Objectives
  - Activities

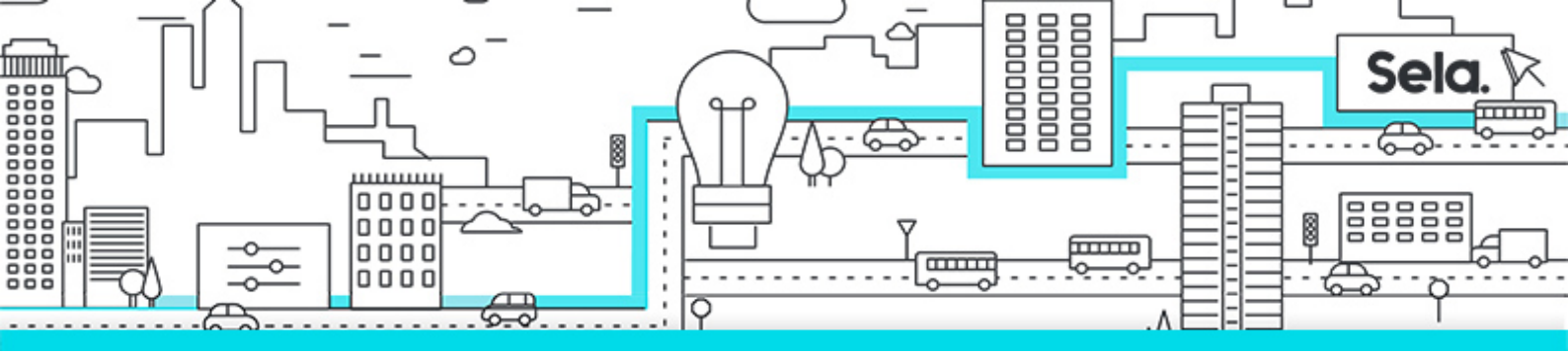


- **Using Pub/Sub to Integrate Components of Your Application**
  - - • Topics, publishers, and subscribers
  - - • Pull and push subscriptions
  - - • Use cases for Pub/Sub
  - - • Lab: Developing a Backend Service
  - - Objectives
  - - Activities

- **Adding Intelligence to Your Application**
  - - Overview of pre-trained machine learning APIs such as the Vision API and the Cloud
  - - Natural Language Processing API
  - - Objectives
  - - Activities

- **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
  - - • Demo: Invoke Cloud Functions Through Direct Request-response
  - - • Lab: Processing Pub/Sub Data using Cloud Functions
  - - Objectives
  - - Activities

- **Managing APIs with Cloud Endpoints**
  - - • Open API deployment configuration
  - - • Lab: Deploying an API for the Quiz Application
  - - Objectives
  - - Activities



- **Deploying Applications**
  - - • Creating and storing container images
  - - • Repeatable deployments with deployment configuration and templates
  - - • Demo: Exploring Cloud Build and Cloud Container Registry
  - - • Lab: Deploying the Application into Kubernetes Engine
  - Objectives
  - Activities

- **Compute Options for Your Application**
  - Considerations for choosing a compute option for your application or service:
  - - • Compute Engine
  - - • Google Kubernetes Engine (GKE)
  - - • Cloud Run
  - - • Cloud Functions
  - - • Platform comparisons.
  - - • Comparing App Engine and Cloud Run
  - Objectives
  - Activities

- **Debugging, Monitoring, and Tuning Performance**
  - - • Google Cloud’s operations suite
  - - • Managing performance
  - - • Lab: Debugging Application Errors
  - - • Logging
  - - • Monitoring and tuning performance
  - - • Identifying and troubleshooting performance issues
  - - • Lab: Harnessing Cloud Trace and Cloud Monitoring
  - Objectives
  - Activities