# Application Development with Google Cloud Run

## Duration: 2 Days  Course Code: GO9078

## Overview:

**Learn how to develop and deploy applications on Google Cloud by using Cloud Run**

This course introduces you to the fundamentals, practices, capabilities and tools for modern cloud application development with Cloud Run. Through a combination of lectures, hands-on labs, and supplemental materials, you learn how to develop and deploy applications on Google Cloud by using Cloud Run.
This version of the course consists of three separate chapters that include topics on creating containers, developing applications with Cloud Run, and Cloud Run functions.

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## Target Audience:

This course is destinated to Partners and customers who want to learn to use the tools and services on Google Cloud to build and run containerized applications.

## Objectives:

- **After this course participants should be able to:**
- Define containers and container images
- Build and package applications into container images
- Identify best practices used to create, test, and secure containers
- Understand the basics of Cloud Run and Google Kubernetes Engine
- Understand the fundamentals of Cloud Run that include the resource model, container lifecycle, and autoscaling
- Develop and test applications locally before deploying to Cloud Run
- Use service identity and IAM with Cloud Run
- Integrate Cloud Run applications with Google Cloud services
- Develop, test, and deploy Cloud Run functions on Google Cloud

## Prerequisites:

- Familiarity with Linux commands and command line interface
- Knowledge of the Google Cloud console, gcloud CLI, and networking
- Basic understanding of programming languages such as Node.js or Python
- Understanding of shell scripts, HTTP, and experience with HTTP client tools like cURL
- Some understanding of other Google Cloud services such as Cloud Storage and Pub/Sub
- Completion of the Google Cloud Fundamentals: Core Infrastructure course (GO8324) is recommended.

## Testing and Certification

This course is part of the Learning path to the Google Cloud Developer certification but is not sufficient to prepare correctly for the exam.

## Follow-on-Courses:

- GO6591 - Getting Started with Google Kubernetes Engine (GKE)
- GO6593 - Developing Applications with Google Cloud
- GO8324 - Google Cloud Fundamentals: Core Infrastructure

## Content:

Module 1: Introduction to containers

- Containers and container images
- Building container images
- Building container images with buildpacks
- Continuous integration and delivery (CI/CD) tools
- Best practices for creating and securing containers
- Lab: Creating and Running Docker Containers
- (Optional) Lab: Creating a Containerized Application with Buildpacks

Module 2: Introduction to Cloud Run and Google Kubernetes Engine

- Introduction to Cloud Run
- Features and use cases of Cloud Run
- Introduction to Google Kubernetes Engine
- Container-Optimized OS
- Lab: Deploying a Containerized Application on Cloud Run

Module 3: Fundamentals of Cloud Run

- Overview
- Resource model
- Container lifecycle
- Autoscaling
- Access control with IAM
- (Optional) Lab: Hello Cloud Run

Module 4: Service identity and authentication

- Service account and identity
- Resource hierarchy
- Principle of least privilege
- Secrets and environment variables
- Lab: Implementing Least Privilege IAM Policy Bindings in Cloud Run

Module 5: Application development, testing, and integration

- Development and testing
- Management of service deployments and revisions
- Integration with Google Cloud services
- Lab: Using Pub/Sub with Cloud Run

Module 6: Introduction to Cloud Run functions

- Cloud Run functions
- Features and benefits of Cloud Run functions
- Cloud Run functions use cases
- Supported language runtimes and regions
- Lab: Develop and Deploy Cloud Run Functions

Module 7: Calling and connecting Cloud Run functions

- Cloud Run functions triggers
- Connect Cloud Run functions with Workflows
- Connect to a VPC network
- (Optional) Lab: Connect Cloud Run Functions

Module 8: Securing Cloud Run functions

- Secure access to Cloud Run functions
- Authenticate to Cloud Run functions
- Protect Cloud Run functions

Module 9: Integrating with cloud databases

- Connect Cloud Run functions to Memorystore
- Use environment variables
- Connect Cloud Run functions to Firestore
- Use secrets with Cloud Run functions
- Lab: Integrate Cloud Run Functions with Firestore

Module 10: Best practices for functions

- Best practices implementing functions
- Improving performance and networking
- Retrying functions
- Configuring functions
- Scaling and traffic splitting

Module 11: Review

## Additional Information:

Official course book provided to participants

## Further Information:

For More information, or to book your course, please call us on Head Office Tel.: +974 40316639

training@globalknowledge.qa

www.globalknowledge.com/en-qa/

Global Knowledge, Qatar Financial Center, Burj Doha,Level 21, P.O.Box 27110, West Bay, Doha, Qatar