

# Set Up an App Dev Environment on Google Cloud: Challenge Lab

GSP315



- Challenge labs provide scenario-based tasks requiring application of course skills without step-by-step instructions, validated by automated scoring.
- No new Google Cloud concepts taught—you'll troubleshoot errors, adjust configurations, and research independently.
- Achieve 100% score by completing all tasks within the strict time limit.
- Recommended for students completing the Set Up an App Dev Environment on Google Cloud skill badge.
- Test your readiness to solve real-world development environment challenges autonomously.

Set Up an App Dev Environment

https://partner.skills.google/pathes/69/course\_templates/637/labs/592550

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner

What do you want to learn today?

5636 0 0 0 0

Dashboard Catalog Paths Collections

Contents Set Up an App Dev Environment on Google Cloud ( 3: as Kubernetes nodes.

Lab setup instructions and requirements End Lab 01:29:12

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more. Open Google Cloud console

Username 1 student-00-bc0c37f1f0da ( )

Username 2 student-01-c77d372a1b15 ( )

Password CcuUkoLuNnzC ( )

Project ID qwiklabs-gcp-01-50a7d6b247b2 ( )

0/100 Lab instructions and tasks

GSP315 Introduction Setup Challenge scenario Task 1. Create a bucket Task 2. Create a Pub/Sub topic Task 3. Create the thumbnail Cloud Run Function Task 4. Remove the previous cloud engineer Congratulations!

Associate Cloud Engineer > Set Up an App Dev Environment on Google Cloud > Set Up an App Dev Environment on Google Cloud: Challenge Lab

Each task is described in detail below, good luck!

## Task 1. Create a bucket

You need to create a bucket called `qwiklabs-gcp-01-50a7d6b247b2-bucket` for the storage of the photographs. Ensure the resource is created in the `us-east1` region and `us-east1-c` zone.

Click *Check my progress* to verify the objective.

Create a bucket called `qwiklabs-gcp-01-50a7d6b247b2-bucket`

**Check my progress**

## Task 2. Create a Pub/Sub topic

Create a Pub/Sub topic called `topic-memories-763` for the Cloud Run Function to

< Previous Next >

3 21°C Sunny

Search

01:53 PM 03-12-2025

Set Up an App Dev Environment

https://partner.skills.google/parts/69/course\_templates/637/labs/592550

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner

What do you want to learn today?

5636 0 0 0 0

Dashboard Catalog Paths Collections

Contents Set Up an App Dev Environment on Google Cloud: (

as Kubernetes nodes.

Lab setup instructions and requirements End Lab 01:27:28

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more. Open Google Cloud console

Username 1 student-00-bc0c37f1f0da (

Username 2 student-01-c77d372a1b15 (

Password CcuUkoLuNnzC (

Project\_ID qwiklabs-gcp-01-50a7d6b247b2 (

0/100 Lab instructions and tasks

GSP315 Introduction Setup Challenge scenario Task 1. Create a bucket Task 2. Create a Pub/Sub topic Task 3. Create the thumbnail Cloud Run Function Task 4. Remove the previous cloud engineer Congratulations!

Task 1. Create a bucket

You need to create a bucket called `qwiklabs-gcp-01-50a7d6b247b2-bucket` for the storage of the photographs. Ensure the resource is created in the `us-east1` region and `us-east1-c` zone.

Click *Check my progress* to verify the objective.

Create a bucket called `qwiklabs-gcp-01-50a7d6b247b2-bucket`

Check my progress

Assessment Completed!

Task 2. Create a Pub/Sub topic

Previous Next

3 21°C Sunny

Search

ENG IN 01:55 PM 03-12-2025

qwiklabs-g...b2-bucket - Bucket +

https://console.cloud.google.com/storage/browser/qwiklabs-gcp-01-50a7d6b247b2-bucket;tab=objects?forceOnBucketsSortingFiltering=true&p...

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 Search / Search

Cloud Storage Bucket details Go to path Refresh Learn

Overview Buckets Monitoring Settings

Storage Intelligence Insights datasets Configuration

Objects Configuration Permissions Protection Lifecycle Observability New Inventory Reports Operations

Folder browser Buckets > qwiklabs-gcp-01-50a7d6b247b2-bucket Create folder Upload Transfer data Other services

Filter by name prefix only Filter Filter objects and folders Show Live objects only

Name Size Type Created Storage class Last modified Public access Version history

No rows to display

Marketplace Release Notes

3 21°C Sunny

Search

ENG IN 01:55 PM 03-12-2025

Set Up an App Dev Environment

https://partner.skills.google/parts/69/course\_templates/637/labs/592550

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner

What do you want to learn today?

5636 0 25/100 Lab instructions and tasks

Dashboard Catalog Paths Collections

Associate Cloud Engineer > Set Up an App Dev Environment on Google Cloud > Set Up an App Dev Environment on Google Cloud: Challenge Lab

Contents Set Up an App Dev Environment on Google Cloud: (

Lab setup instructions and requirements Check my progress Assessment Completed! 01:26:59

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username 1 student-00-bc0c37f1f0da (

Username 2 student-01-c77d372a1b15 (

Password CcuUkoLuNnzC (

Project\_ID qwiklabs-gcp-01-50a7d6b (

Task 2. Create a Pub/Sub topic

Create a Pub/Sub topic called `topic-memories-763` for the Cloud Run Function to send messages.

Click *Check my progress* to verify the objective.

Create a Pub/Sub topic called `topic-memories-763`

Check my progress

Task 3. Create the thumbnail Cloud Run Function

Previous Next

3 21°C Sunny

Search

ENG IN 01:56 PM 03-12-2025

GSP315 Introduction Setup Challenge scenario Task 1. Create a bucket Task 2. Create a Pub/Sub topic Task 3. Create the thumbnail Cloud Run Function Task 4. Remove the previous cloud engineer Congratulations!

qwiklabs-g...b2-bucket - Bucket +

https://console.cloud.google.com/storage/browser/qwiklabs-gcp-01-50a7d6b247b2-bucket;tab=objects?forceOnBucketsSortingFiltering=true&p...

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2

Cloud Storage Bucket details

Overview Buckets Monitoring Settings Storage Intelligence Insights datasets Configuration Marketplace Release Notes

Bucket details

qwiklabs-gcp-01-50a7d6b247b2

Location us-east1 (South Carolina) Storage class Standard

Objects Configuration Perms

Folder browser

qwiklabs-gcp-01-50a7d6b247b2

pub/sub

X Search

Top results

- Pub/Sub Product · Global real-time messaging
- Topics Product page · Pub/Sub
- Subscriptions Product page · Pub/Sub

Products & pages

- Pub/Sub Product · Global real-time messaging
- Topics Product page · Pub/Sub
- Subscriptions Product page · Pub/Sub

Documentation & tutorials

- What is Pub/Sub? Documentation · Pub/Sub is used for streaming analytics and data integration pipelines to lo...
- Pub/Sub for Application & Data Integration Documentation · Pub/Sub works as a messaging middleware for traditional service integration...
- Introduction to Pub/Sub

Go to path Refresh Learn

Show Live objects only

Public access Version history

https://console.cloud.google.com/cloudpubsub?referrer=search&project=qwiklabs-gcp-01-50a7d6b247b2

3 21°C Sunny

Search

ENG IN 01:56 PM 03-12-2025

Topics – Pub/Sub – qwiklabs-gcp X +

https://console.cloud.google.com/cloudpubsub/topic/list?referrer=search&project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 pub/sub Search

Pub/Sub / Topics

Pub/Sub Topics Subscriptions Snapshots Schemas

Pub/Sub Lite Lite Reservations Lite Topics Lite Subscriptions

Release Notes

3 21°C Sunny

Topics Create topic Delete Tags

Pub/Sub offers SMTs to simplify data transformations for streaming pipelines New

Perform single message transforms such as casting, redaction, masking, complex filtering, to message attributes and/or the data directly within Pub/Sub using new JavaScript User-Defined Functions (UDFs).

Learn more

Simplify data lake pipelines with new Pub/Sub Cloud Storage subscriptions

You can now streamline your data ingestion pipelines with Cloud Storage subscriptions, enabling you to write raw streaming data into Cloud Storage without any transformations in between. To get started, create a new Cloud Storage subscription for a Pub/Sub topic.

Create Cloud Storage Subscription Learn more

List Metrics

Filter topics

<input type="checkbox"/> Topic ID ↑	Encryption key	Topic name	Retention	Ingestion source
No topics to display				

Select a topic

Permissions Labels Storage policy

Please select at least one resource.

https://console.cloud.google.com/cloudpubsub/topic/create?project=qwiklabs-gcp-01-50a7d6b247b2...

ENG IN 01:57 PM 03-12-2025

Create topic – Pub/Sub – qwiklab X +

https://console.cloud.google.com/cloudpubsub/topic/create?project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 pub/sub Search

Pub/Sub / Topics / Create topic

Pub/Sub Topics Subscriptions Snapshots Schemas

Pub/Sub Lite Lite Reservations Lite Topics Lite Subscriptions

Release Notes

3 21°C Sunny

Search

Learn

Topic ID \* topic-memories-763

Topic name: projects/qwiklabs-gcp-01-50a7d6b247b2/topics/topic-memories-763

Add a default subscription ?

Use a schema ?

Enable ingestion ?

Enable message retention ?

Export message data to BigQuery ?

Backup message data to Cloud Storage ?

Transforms

Optional manipulate and filter message data. View sample code in our [repository](#).

Add a Transform

Encryption

Google-managed encryption key  
Keys owned by Google

Cloud KMS key  
Keys owned by customers

ENG IN 01:58 PM 03-12-2025

topic-memories-763 – Pub/Sub

https://console.cloud.google.com/cloudpubsub/topic/detail/topic-memories-763?project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasing... Transcript of Case Study GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 pub/sub Search

Pub/Sub / Topics / Topic: topic-memories-763

topic-memories-763

Topics Subscriptions Snapshots Schemas

Pub/Sub Lite Lite Reservations Lite Topics Lite Subscriptions

Subscriptions Snapshots Metrics Details Messages

Only subscriptions attached to this topic are displayed. A subscription captures the stream of messages published to a given topic. You can also stream messages to BigQuery or Cloud Storage by creating a subscription from a Cloud Dataflow job. [Learn more](#)

Create subscription Export

Filter subscriptions

Subscription ID	Subscription name	Project
topic-memories-763-sub	projects/qwiklabs-gcp-01...	qwiklabs-gcp-01...

Permissions Labels Storage policy

Add principal

Show inherited roles in table

Display roles inherited from the parent resources in the table below

Filter Enter property name or value

Role / Principal Inheritance

- Cloud Build Service Account (1)
- Cloud Build Service Agent (1)
- Editor (2)
- Owner (3)
- Viewer (2)

ENG IN 01:58 PM 03-12-2025

21°C Sunny

Set Up an App Dev Environment

https://partner.skills.google/pathes/69/course\_templates/637/labs/592550

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner

What do you want to learn today?

5636 0 25/100 Lab instructions and tasks

Dashboard Catalog Paths Collections

Associate Cloud Engineer > Set Up an App Dev Environment on Google Cloud > Set Up an App Dev Environment on Google Cloud: Challenge Lab

Contents Set Up an App Dev Environment on Google Cloud: C

Lab setup instructions and requirements End Lab 01:24:01

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username 1 student-00-bc0c37f1f0da ( )

Username 2 student-01-c77d372a1b15 ( )

Password CcuUkoLuNnzC ( )

Project\_ID qwiklabs-gcp-01-50a7d6b ( )

Check my progress Assessment Completed!

Task 2. Create a Pub/Sub topic

Create a Pub/Sub topic called `topic-memories-763` for the Cloud Run Function to send messages.

Click *Check my progress* to verify the objective.

Create a Pub/Sub topic called `topic-memories-763`

Check my progress Assessment Completed!

Task 3. Create the thumbnail Cloud Run Function

Previous Next

3 21°C Sunny

Search

ENG IN 01:59 PM 03-12-2025

GSP315 Introduction Setup Challenge scenario Task 1. Create a bucket Task 2. Create a Pub/Sub topic Task 3. Create the thumbnail Cloud Run Function Task 4. Remove the previous cloud engineer Congratulations!

Set Up an App Dev Environment

https://partner.skills.google/parts/69/course\_templates/637/labs/592550

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner

What do you want to learn today?

5636 0 25/100

Dashboard Catalog Paths Collections

Contents Set Up an App Dev Environment on Google Cloud: (

Lab setup instructions and requirements End Lab 01:23:51

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username 1 student-00-bc0c37f1f0da (

Username 2 student-01-c77d372a1b15 (

Password CcuUkoLuNnzC (

Project\_ID qwiklabs-gcp-01-50a7d6b (

Task 3. Create the thumbnail Cloud Run Function

### Create the function

Create a Cloud Run Function `memories-thumbnail-maker` that will create a thumbnail from an image added to the `qwiklabs-gcp-01-50a7d6b247b2-bucket` bucket.

Ensure the Cloud Run Function is using the **Cloud Run function** environment (which is 2nd generation). Ensure the resource is created in the `us-east1` region and `us-east1-c` zone.

1. Create a Cloud Run Function (2nd generation) called `memories-thumbnail-maker` using `Node.js 22`.

**Note:** The Cloud Run Function is required to execute every time an object is created in the bucket created in Task 1. During the process, Cloud Run Function may request permission to enable APIs or request permission to grant roles to service accounts. Please enable each of the required APIs and grant roles as requested.

Lab instructions and tasks

GSP315 Introduction Setup Challenge scenario Task 1. Create a bucket Task 2. Create a Pub/Sub topic Task 3. Create the thumbnail Cloud Run Function Task 4. Remove the previous cloud engineer Congratulations!

21°C 03-12-2025 01:59 PM

ENG IN

Previous Next

Set Up an App Dev Environment x +

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner What do you want to learn today? 5636 0 ? 🌐

Dashboard Catalog Paths Collections

Contents Set Up an App Dev Environment on Google Cloud: C

End Lab 01:21:05

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username 1 student-00-bc0c37f1f0da (Copy)

Username 2 student-01-c77d372a1b15 (Copy)

Password CcuUkoLuNnzC (Copy)

Project ID qwiklabs-gcp-01-50a7d6b (Copy)

Ensure the Cloud Run Function is using the **Cloud Run function** environment (which is 2nd generation). Ensure the resource is created in the `us-east1` region and `us-east1-c` zone.

1. Create a Cloud Run Function (2nd generation) called `memories-thumbnail-maker` using `Node.js 22`.

**Note:** The Cloud Run Function is required to execute every time an object is created in the bucket created in Task 1. During the process, Cloud Run Function may request permission to enable APIs or request permission to grant roles to service accounts. Please enable each of the required APIs and grant roles as requested.

2. Make sure you set the **Entry point** (Function to execute) to `memories-thumbnail-maker` and **Trigger** to `Cloud Storage`.

3. Add the following code to the `index.js`:

```
const functions = require('@google-cloud/functions-framework');
```

50/100 Lab instructions and tasks

GSP315 Introduction Setup Challenge scenario Task 1. Create a bucket Task 2. Create a Pub/Sub topic Task 3. Create the thumbnail Cloud Run Function Task 4. Remove the previous cloud engineer Congratulations!

Next >

3 21°C Sunny

Search

ENG IN 02:02 PM 03-12-2025

topic-memories-763 – Pub/Sub

https://console.cloud.google.com/cloudpubsub/topic/detail/topic-memories-763?project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasing... Transcript of Case Study GCP-LAB Hydra datawarehouse

Google Cloud Project: qwiklabs-gcp-01-50a7d6b247b2

Pub/Sub / Topics / Topic: topic-memories-763

topic-memories-763

Topic name

Tags

Cloud Run

Product · Fully managed application platform

Cloud Run functions

Product · Event-driven serverless functions

Cloud Run

Documentation · Cloud Run is a fully managed platform that enables you to run your code...

Products & pages

Cloud Run

Product · Fully managed application platform

Cloud Run functions

Product · Event-driven serverless functions

Domain mappings

Product page · Cloud Run

Documentation & tutorials

Cloud Run

Documentation · Cloud Run is a fully managed platform that enables you to run your code...

Cloud Run documentation

Labels Storage policy

Add principal

Inherited roles in table

roles inherited from the parent resources in the table

Property name or value

Inheritance

Service Account (1)

Service Agent (1)

Release Notes

Subscription ID ↑ Subscription name Project

topic-memories-763 projects/qwiklabs-gcp-01-50a7d6b247b2

21°C 3 Sunny

Search

ENG IN

02:00 PM 03-12-2025

Services – Cloud Run – qwiklabs X +

https://console.cloud.google.com/run?referrer=search&project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasing... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 cloud run Search

Cloud Run Services Deploy container Connect repo Write a function Refresh

Overview Services Jobs Worker pools Domain mappings

A service exposes a unique endpoint and automatically scales the underlying infrastructure to handle incoming requests. Deploy a container image, source code or a function to create a service.

Filter services Name Deployment type Req/sec Region Authentication Ingress Last deployed Deployed by

Run your app on a fully managed platform

Get started by creating a service - each Cloud Run service has a unique endpoint and autoscales your container, code or function. [Learn more](#)

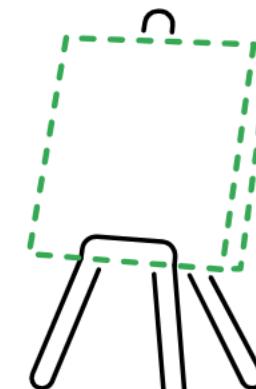
Clicking "Create service" will enable the Cloud Run Admin API.

https://console.cloud.google.com/run/create?enableapi=true&deploymentType=function&p...

3 21°C Sunny

Search

ENG IN 02:01 PM 03-12-2025



Cloud Run – qwiklabs-gcp-01-50 x +

https://console.cloud.google.com/run/create?enableapi=true&deploymentType=function&project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasing... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 cloud run

Cloud Run Create service

Some locations have been restricted due to a policy set by your organization. [Learn more about locations](#)

Region \* How to pick a region?

Endpoint URL https://memories-thumbnail-maker-193936433586.region.run.app

Runtime \* Node.js 22

Trigger (optional) + Add trigger

Authentication \*

- Allow public access  
No authentication checks will be performed.
- Require authentication  
Select between Identity and Access Management (IAM) and/or Identity-Aware Proxy (IAP).

Billing \*

- Request-based  
Charged only when processing requests. CPU is limited outside of requests.

Create Cancel

Eventarc trigger

Enable required APIs

Please enable the APIs to use the Eventarc triggers.

Eventarc API Not enabled

Cloud Pub/Sub API Enabled

Enable Send feedback

Save trigger Cancel

3 21°C Sunny ENG IN 02:03 PM 03-12-2025

Cloud Run – qwiklabs-gcp-01-50 x +

https://console.cloud.google.com/run/create?enableapi=false&deploymentType=function&project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasing... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 Search (/) for resources, docs, products, and more

Cloud Run Create service

Runtime \* Node.js 22

Trigger (optional) [?](#)

+ Add trigger

Authentication \*

Allow public access  
No authentication checks will be performed.

Require authentication  
Select between Identity and Access Management (IAM) and/or Identity-Aware Proxy (IAP).

Billing [?](#)

Request-based  
Charged only when processing requests. CPU is limited outside of requests.

Instance-based  
Charged for the entire lifecycle of instances. Full CPU for the entire lifetime of each instance.

Service scaling [?](#)

Auto scaling

Minimum number of instances 0 Maximum number of instances

Create Cancel

Eventarc trigger

Trigger name \* trigger-yhz8gffp

Trigger type Google sources Event provider \* Cloud Storage

Event type \* google.cloud.storage.object.v1.finalized

Show details

Event data content type application/json

Bucket \* Browse

Google Cloud Storage bucket to subscribe to

Some locations have been restricted due to a policy set by your organization. [Learn more about restricting locations.](#)

Region

Region is selected based on the selected Cloud Storage bucket

The event source region you picked is different from your destination region. By picking this option, you acknowledge that your event data may be moved across regions.

Service account Compute Engine default service account

Air: Very poor Now

Search

02:24 PM 03-12-2025 ENG IN

Cloud Run – qwiklabs-gcp-01-50 x +

https://console.cloud.google.com/run/create?enableapi=true&deploymentType=function&project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 cloud run Search 2 ? s

Cloud Run Create service Show command line

Overview Services (selected)

Jobs Worker pools Domain mappings

The maximum number of concurrent requests that can reach each instance. [What is concurrency?](#)

**Pricing summary**

**Execution environment**

The execution environment your container runs in. [Learn More](#)

Default  
Cloud Run will select a suitable execution environment for you.

First generation  
Faster cold starts.

Second generation  
Network file system support, full Linux compatibility, faster CPU and network performance.

**Cloud Run pricing**

Free tier

First 180,000 vCPU-seconds/month

First 360,000 GiB-seconds/month

2 million requests/month

Check paid tiers details

[Open pricing calculator](#)

**Revision scaling** ⓘ

Minimum and maximum numbers of instances for the new revision.

Minimum number of instances Maximum number of instances

The service minimum instances is preferable for most use-cases. Only use this setting if you specifically require per-revision settings.

Startup CPU boost  
Start containers faster by allocating more CPU during startup time. [Learn more](#)

Create Cancel

3 21°C Sunny

Search

ENG IN 02:14 PM 03-12-2025

Cloud Run – qwiklabs-gcp-01-50 x +

https://console.cloud.google.com/run/create?enableapi=false&deploymentType=function&project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 Search (/) for resources, docs, products, and more Search

Cloud Run Create service Show command line

Overview Services Jobs Worker pools Domain mappings

Pricing summary

**Authentication \***

Allow public access  
No authentication checks will be performed.

Require authentication  
Select between Identity and Access Management (IAM) and/or Identity-Aware Proxy (IAP).

Identity and Access Management (IAM)  
Manage authorized identities with Cloud IAM. Use this to set permissions for service to service communication

Identity Aware Proxy (IAP) [Preview](#)  
Manage authorized users with IAP. Use this to set advanced context-aware access to browser-based frontend applications

**Billing** [?](#)

Request-based  
Charged only when processing requests. CPU is limited outside of requests.

Instance-based  
Charged for the entire lifecycle of instances. Full CPU for the entire lifetime of each instance.

[Open pricing calculator](#)

**Service scaling** [?](#)

Auto scaling

Minimum number of instances

Create Cancel

Cloud Run pricing

Free tier

First 180,000 vCPU-seconds/month

First 360,000 GiB-seconds/month

2 million requests/month

Check paid tiers details

5 21°C Sunny ENG IN 02:30 PM 03-12-2025

Source – m...ail-maker – Cloud Run

https://console.cloud.google.com/run/detail/us-east1/memories-thumbnail-maker/source?project=qwiklabs-gcp-01-50a7d6b247b2

Cloud Run Service details Edit & deploy new revision Connect to repo Test Learn Refresh

Overview Services Jobs Worker pools Domain mappings

Creating service Creating service Completed  
Creating revision Creating revision Completed  
Routing traffic Routing traffic Completed  
Creating Eventarc trigger Creating Eventarc trigger Completed

memories-thumbnail-maker Region: us-east1 URL: https://memories-thumbnail-maker-193936433586.us-east1.run.app Scaling: Auto (Min: 0)

Observability Revisions Source Triggers Networking Security YAML

Source Base image: Node.js 22 (Ubuntu 22) Function entry point helloGCS Save and redeploy Show payload

index.js package.json

```
const functions = require('@google-cloud/functions-framework');

// Register a CloudEvent callback with the Functions Framework that will
// be triggered by Cloud Storage.
functions.cloudEvent('helloGCS', cloudEvent => {
  console.log(`Event ID: ${cloudEvent.id}`);
  console.log(`Event Type: ${cloudEvent.type}`);

  const file = cloudEvent.data;
  console.log(`Bucket: ${file.bucket}`);
  console.log(`File: ${file.name}`);
  console.log(`Metageneration: ${file.metageneration}`);
  console.log(`Created: ${file.timeCreated}`);
  console.log(`Updated: ${file.updated}`);
});
```

Release Notes

5 21°C Sunny

Search

ENG IN 02:33 PM 03-12-2025

Set Up an App Dev Environment x +

https://partner.skills.google(paths/69/course\_templates/637/labs/592550)

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner What do you want to learn today? 5636 🔥 0 ? 🌐

Dashboard Catalog Paths Collections

Associate Cloud Engineer > Set Up an App Dev Environment on Google Cloud > Set Up an App Dev Environment on Google Cloud: Challenge Lab

Contents Set Up an App Dev Environment on Google Cloud: C ⋮

End Lab 00:48:52

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username 1 student-00-bc0c37f1f0da (Copy)

Username 2 student-01-c77d372a1b15 (Copy)

Password CcuUkoLuNnzC (Copy)

Project ID qwiklabs-gcp-01-50a7d6b (Copy)

Note: The Cloud Run Function is required to execute every time an object is created in the bucket created in Task 1. During the process, Cloud Run Function may request permission to enable APIs or request permission to grant roles to service accounts. Please enable each of the required APIs and grant roles as requested.

2. Make sure you set the **Entry point** (Function to execute) to `memories-thumbnail-maker` and **Trigger** to `Cloud Storage`.

3. Add the following code to the `index.js`:

```
const functions = require('@google-cloud/functions-framework');
const { Storage } = require('@google-cloud/storage');
const { PubSub } = require('@google-cloud/pubsub');
const sharp = require('sharp');

functions.cloudEvent('memories-thumbnail-maker', async cloudEvent =>
  const event = cloudEvent.data;

  console.log(`Event: ${JSON.stringify(event)}`);
  console.log(`Hello ${event.bucket}`);

  const fileName = event.name;
```

5 21°C Sunny

Search

ENG IN

02:34 PM 03-12-2025

50/100 Lab instructions and tasks

GSP315

Introduction

Setup

Challenge scenario

Task 1. Create a bucket

Task 2. Create a Pub/Sub topic

Task 3. Create the thumbnail Cloud Run Function

Task 4. Remove the previous cloud engineer

Congratulations!

Source – mail-maker – Cloud Run – [qwiklabs-g...b2-bucket – Cloud S](#) +

https://console.cloud.google.com/storage/browser/qwiklabs-gcp-01-50a7d6b247b2-bucket;tab=objects?forceOnBucketsSortingFiltering=true&p...

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Cloud [qwiklabs-gcp-01-50a7d6b247b2](#) Search ( / ) for resources, docs, products, and more Search

Cloud Storage Bucket details Go to path Refresh

Overview Buckets Monitoring Settings

Storage Intelligence Insights datasets Configuration

Objects Configuration Permissions Protection Lifecycle Observability New Inventory Reports Operations

Folder browser Buckets > qwiklabs-gcp-01-50a7d6b247b2-bucket Create folder Upload Transfer data Other services Learn

Filter by name prefix only Filter Filter objects and folders Show Live objects only

Name	Size	Type	Created	Storage class
kitten.png	132.9 KB	image/png	Dec 3, 2025, 2:38:47 PM	Standard
kitten_64x64_thumbnail.png	7.9 KB	image/png	Dec 3, 2025, 2:38:48 PM	Standard

Uploads and qwiklabs-gcp-01-50a7... operations

✓ kitten.png Complete

5 21°C Sunny ENG IN 02:38 PM 03-12-2025

Source – mail-maker – Cloud Run x qwiklabs-g...b2-bucket – Cloud Storage +

https://console.cloud.google.com/run/detail/us-east1/memories-thumbnail-maker/source?project=qwiklabs-gcp-01-50a7d6b247b2

Free AI Paraphrasing... Transcript of Case Study GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 Search (/) for resources, docs, products, and more Search

Cloud Run Service details Edit & deploy new revision Connect to repo Test Learn Refresh

Overview Deploying revision Hide status

Building source (see logs) Completed  
Updating service Completed  
Creating revision Completed  
Routing traffic Completed

Services memories-thumbnail-maker Region: us-east1 URL: https://memories-thumbnail-maker-193936433586.us-east1.run.app Scaling: Auto (Min: 0)

Jobs Worker pools Domain mappings

Observability Revisions Source Triggers Networking Security YAML

Source Base image: Node.js 22 (Ubuntu 22) Function entry point: memories-thumbnail-maker Edit source Show payload

index.js package.json

```
1 const functions = require('@google-cloud/functions-framework');
2 const { Storage } = require('@google-cloud/storage');
3 const { PubSub } = require('@google-cloud/pubsub');
4 const sharp = require('sharp');
5
6 functions.cloudEvent('memories-thumbnail-maker', async cloudEvent => {
7   const event = cloudEvent.data;
8
9   console.log(`Event: ${JSON.stringify(event)}`);
10  console.log(`Hello ${event.bucket}`);
11
12  const fileName = event.name;
13  const bucketName = event.bucket;
14  const size = "64x64";
15  const bucket = new Storage().bucket(bucketName);
16  const topicName = "topic-memories-763";
17  const pubsub = new PubSub();
18
```

Release Notes Download archive

Uploads and qwiklabs-gcp-01-50a7... operations ▼

1764752770.713000.zip Complete

5 21°C Sunny ENG IN 02:39 PM 03-12-2025

Set Up an App Dev Environment

https://partner.skills.google/parts/69/course\_templates/637/labs/592550

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner What do you want to learn today? 5636 🔥 0 ? 🌐

Dashboard Catalog Paths Collections

Associate Cloud Engineer > Set Up an App Dev Environment on Google Cloud > Set Up an App Dev Environment on Google Cloud: Challenge Lab

Contents Set Up an App Dev Environment on Google Cloud: C

End Lab 00:43:34

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username 1: student-00-bc0c37f1f0da@qwiklabs.net  
Username 2: student-01-c77d372a1b15@qwiklabs.net  
Password: CcuUkoLuNnzC  
Project ID: qwiklabs-gcp-01-50a7d6b7

Information that you previously provided for the function, which may not have saved correctly if you previously encountered errors. If you do not see the Cloud Storage trigger in the Triggers tab of the function, you can recreate the trigger (see the documentation page titled [Create a trigger for services](#)), and then upload a new file again to test again (refresh the page after adding a new file).

Click *Check my progress* to verify the objective.

Verify the Cloud Run Function  
 Check my progress  
Assessment Completed!

50/100 Lab instructions and tasks

GSP315

Introduction

Setup

Challenge scenario

Task 1. Create a bucket

Task 2. Create a Pub/Sub topic

Task 3. Create the thumbnail Cloud Run Function

Task 4. Remove the previous cloud engineer

Congratulations!

## Task 4. Remove the previous cloud engineer

You will see that there are two users defined in the project.

- One is your account (`student-00-bc0c37f1f0da@qwiklabs.net` with the role of Owner).

< Previous Next >

5 21°C Sunny

Search

ENG IN

02:39 PM 03-12-2025

Set Up an App Dev Environment x +

https://partner.skills.google(paths/69/course\_templates/637/labs/592550)

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner What do you want to learn today? 5636 🔥 0 ? 🌐

Dashboard Catalog Paths Collections

Contents Set Up an App Dev Environment on Google Cloud: C

End Lab 00:42:21

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username 1: student-00-bc0c37f1f0da@qwiklabs.net  
Username 2: student-01-c77d372a1b15@qwiklabs.net  
Password: CcuUkoLuNnzC  
Project\_ID: qwiklabs-gcp-01-50a7d6b7

Task 4. Remove the previous cloud engineer

You will see that there are two users defined in the project.

- One is your account (`student-00-bc0c37f1f0da@qwiklabs.net` with the role of Owner).
- The other is the previous cloud engineer (`student-01-c77d372a1b15@qwiklabs.net` with the role of Viewer).

1. Remove the previous cloud engineer's access from the project.

Click *Check my progress* to verify the objective.

Remove the previous cloud engineer

Check my progress

80/100

GSP315

Introduction

Setup

Challenge scenario

Task 1. Create a bucket

Task 2. Create a Pub/Sub topic

Task 3. Create the thumbnail Cloud Run Function

Task 4. Remove the previous cloud engineer

Congratulations!

Conratulations!

◀ Previous Next ▶

5 21°C Sunny

Search

ENG IN

02:40 PM 03-12-2025

Source – mail-maker – Cloud Run – | qwiklabs-g...b2-bucket – Cloud Storage | IAM – IAM & Admin – qwiklabs-gcp-01-50a7d6b247b2 | +

Free AI Paraphrasing... Transcript of Case Study GCP-LAB Hydra datawarehouse

Google Cloud

- Cloud Hub >
- Cloud overview >
- Solutions >
- Recently visited >

Pinned products

Pin your top products here

Products

- Billing
- IAM & Admin >
- Marketplace
- APIs & Services
- Vertex AI
- Compute Engine
- Kubernetes Engine

[View all products](#)

Search (/) for resources, docs, products, and more [Search](#)

Learn

Recommended for you

- [IAM overview](#) Help document  
Basic IAM concepts and access management in Google Cloud.
- [Grant an IAM role using the Google Cloud console](#) Help document  
Use the Google Cloud console to grant IAM roles to principals at the project level.
- [Choose predefined roles](#) Help document  
Choose which predefined roles to grant to users.
- [Basic and predefined roles reference](#) Help document  
IAM roles that you can grant to identities to access Google Cloud resources.
- [Manage access to projects, folders, and organizations](#)

LEARN Tutorial

Recent history

"qwiklabs-gcp-01-

Grant an IAM role to a principal

Grant an IAM role to a principal

Include Google-provided role grants

Name	Role	Security insights
super.gserviceaccount.com	Compute Engine default service account	Editor
eventarc.gserviceaccount.com	Eventarc Event Receiver	
os-services-accounts.gserviceaccount.com	Owner	
predawn.gserviceaccount.com		

Create a Project

5 21°C Sunny

ENG IN 02:40 PM 03-12-2025

Source – mail-maker – Cloud Run – qwiklabs-g...b2-bucket – Cloud Storage IAM – IAM & Admin – qwiklabs-gcp-01-50a7d6b247b2 +

Free AI Paraphrasing... Transcript of Case Study GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 Search (/) for resources, docs, products, and more Search

IAM & Admin / IAM

**IAM**

Allow Deny Recommendations history

Permissions for project "qwiklabs-gcp-01-50a7d6b247b2"

These permissions affect this project and all of its resources. [Learn more](#)

Include Google-provided role grants [?](#)

[View by principals](#) [View by roles](#)

[Grant access](#) [Remove access](#)

[Filter](#) student-01-c77d372a1b15@qwiklabs.net [X](#) Enter property name or value [X](#) [?](#) [☰](#)

Type	Principal ↑	Name	Role	Security insights <a href="#">?</a>
<input type="checkbox"/>	 student-01-c77d372a1b15@qwiklabs.net		Viewer	<a href="#">Edit</a>

5 21°C Sunny ENG IN 02:42 PM 03-12-2025

Source – mail-maker – Cloud Run – qwiklabs-g...b2-bucket – Cloud Storage IAM – IAM & Admin – qwiklabs-gcp-01-50a7d6b247b2 +

Free AI Paraphrasing... Transcript of Case Study GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 Search (/) for resources, docs, products, and more Search

IAM & Admin / IAM

**IAM**

Allow Deny Recommendations history

Permissions for project "qwiklabs-gcp-01-50a7d6b247b2"

These permissions affect this project and all of its resources. [Learn more](#)

Include Google-provided role grants [?](#)

[View by principals](#) [View by roles](#)

[Grant access](#) [Remove access](#)

Filter student-01-c77d372a1b15@qwiklabs.net  Enter property name or value [X](#) [?](#) [☰](#)

Type	Principal ↑	Name	Role	Security insights <a href="#">?</a>
<input type="checkbox"/>	<input type="checkbox"/> student-01-c77d372a1b15@qwiklabs.net		Viewer	<a href="#">Edit principal</a>

5 21°C Sunny ENG IN 02:42 PM 03-12-2025

The screenshot shows the Google Cloud IAM interface. The left sidebar has a dark theme with white icons and labels. The main area is light gray with blue highlights for selected sections. The top navigation bar shows "Google Cloud" and the project ID "qwiklabs-gcp-01-50a7d6b247b2".

**IAM & Admin / IAM**

- IAM** (selected)
- PAM
- Security Insights ...
- Principal Access Boun...
- Identity & Organization
- Policy Troubleshooter
- Policy Analyzer
- Organization Policies
- Service Accounts
- Workload Identity Fede...
- Workforce Identity Fed...
- Labels
- Tags
- Settings
- Manage Resources
- Release Notes

**IAM**

Allow Deny Recommendations history

## Permissions for project "qwiklabs-gcp-01-50a7d6b247b2"

These permissions affect this project and all of its resources. [Learn more](#)

[View by principals](#) [View by roles](#)

[Grant access](#) [Remove access](#)

[Filter](#) student-01-c77d372a1b15@qwiklabs.net [X](#)

Type	Principal ↑
<input type="checkbox"/>	student-01-c77d372a1b15@qwiklabs.net

Edit access to "qwiklabs-gcp-01-50a7d6b247b2"

Principal	?	Project
student-01-c77d372a1b15@qwiklabs.net		qwiklabs-gcp-01-50a7d6b247b2

## Assign roles

Roles are composed of sets of permissions and determine what the principal can do with this resource. [Learn more](#) 

Role	IAM condition (optional) 
<input type="text" value="Viewer"/> 	<a href="#">+ Add IAM condition</a>
View most Google Cloud resources. See the list of included permissions.	
<a href="#">+ Add another role</a>	
 <a href="#">Help me choose roles</a>	
<a href="#">Save</a>	<a href="#">Test changes</a>
 <a href="#">Cancel</a>	

Source – mail-maker – Cloud Run – qwiklabs-g...b2-bucket – Cloud Storage IAM – IAM & Admin – qwiklabs-gcp-01-50a7d6b247b2 +

Free AI Paraphrasing... Transcript of Case Study GCP-LAB Hydra datawarehouse

Google Cloud qwiklabs-gcp-01-50a7d6b247b2 Search (/) for resources, docs, products, and more Search

IAM & Admin / IAM

**IAM**

Allow Deny Recommendations history

Permissions for project "qwiklabs-gcp-01-50a7d6b247b2"

These permissions affect this project and all of its resources. [Learn more](#)

Include Google-provided role grants [?](#)

[View by principals](#) [View by roles](#)

[Grant access](#) [Remove access](#)

[Filter](#) student-01-c77d372a1b15@qwiklabs.net  Enter property name or value [X](#) [?](#) [☰](#)

Type	Principal	Name	Role	Security insights
No rows to display				

Policy updated. It may take a few minutes for these changes to become active.

5 21°C Sunny ENG IN 02:43 PM 03-12-2025

Set Up an App Dev Environment x +

https://partner.skills.google(paths/69/course\_templates/637/labs/592550)

Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse

Google Skills Partner What do you want to learn today? 5636 🔥 0 ? 🌐

Associate Cloud Engineer > Set Up an App Dev Environment on Google Cloud > Set Up an App Dev Environment on Google Cloud: Challenge Lab

Contents Set Up an App Dev Environment on Google Cloud: C ⏹

Dashboard Catalog Paths Collections

End Lab 00:39:22

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username 1: student-00-bc0c37f1f0da@qwiklabs.net  
Username 2: student-01-c77d372a1b15@qwiklabs.net  
Password: CcuUkoLuNnzC  
Project\_ID: qwiklabs-gcp-01-50a7d6b7

Task 4. Remove the previous cloud engineer

You will see that there are two users defined in the project.

- One is your account (`student-00-bc0c37f1f0da@qwiklabs.net` with the role of Owner).
- The other is the previous cloud engineer (`student-01-c77d372a1b15@qwiklabs.net` with the role of Viewer).

1. Remove the previous cloud engineer's access from the project.

Click *Check my progress* to verify the objective.

Remove the previous cloud engineer

Check my progress

Assessment Completed!

Check complete. Points earned: 20. Message: Assessment Completed!

100/100 Lab instructions and tasks

GSP315 Introduction Setup Challenge scenario Task 1. Create a bucket Task 2. Create a Pub/Sub topic Task 3. Create the thumbnail Cloud Run Function Task 4. Remove the previous cloud engineer Congratulations!

5 21°C Sunny

Search

ENG IN 02:44 PM 03-12-2025