Host a Web App on Google Cloud Using Compute Engine - LAB

GSP662

Google Cloud Self-Paced Labs

Overview

There are many ways to deploy web sites within Google Cloud. Each solution offers different features, capabilities, and levels of control. Compute Engine offers a deep level of control over the infrastructure used to run a web site, but also requires a little more operational management compared to solutions like Google Kubernetes Engines (GKE), App Engine, or others. With Compute Engine, you have fine-grained control of aspects of the infrastructure, including the virtual machines, load balancers, and more.
In this lab you explore how to deploy a sample application, the "Fancy Store" e-commerce website, to show how a website can be deployed and scaled easily with Compute Engine.

What you'll learn

In this lab, you learn how to perform the following tasks:
•Create Compute Engine instances.
•Create instance templates from source instances.
•Create managed instance groups.
•Create and test managed instance group health checks.
•Create HTTP(S) Load Balancers.
•Create load balancer health checks.
•Use a Content Delivery Network (CDN) for caching.

By the end of the lab, you should have instances inside managed instance groups to provide autohealing, load balancing, autoscaling, and rolling updates for your website.

Note: This lab shows error many times around Task 6. Keep a good check around this task

Lab setup instructions and requirements

End Lab 01:29:39

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Task 1. Enable the Compute Engine API

- Enable the Compute Engine API by executing the following:

```
gcloud services enable compute.googleapis.com
```

Task 2. Create a Cloud Storage bucket

You use a Cloud Storage bucket to house your built code as well as your startup scripts.

- From Cloud Shell, execute the following to create a new Cloud Storage bucket:

```
gsutil mb gs://fancy-store-qwiklabs-gcp-03-4a184603f259
```

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

Dashboard | Activity | Recommendations | Customize

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
Welcome to Cloud Shell! Type "help" to get started, or type "gemini" to try prompting with Gemini CLI.
Your Cloud Platform project in this session is set to qwiklabs-gcp-03-4a184603f259.
Use `gcloud config set project [PROJECT_ID]` to change to a different project.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud services enable compute.googleapis.com
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

10°C Clear | Search | ENG US | 05:16 AM 25-11-2025

Lab setup instructions and requirements

End Lab 01:28:11

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Open Google Cloud console

Username
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EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Task 2. Create a Cloud Storage bucket

You use a Cloud Storage bucket to house your built code as well as your startup scripts.

- From Cloud Shell, execute the following to create a new Cloud Storage bucket:

```
gsutil mb gs://fancy-store-qwiklabs-gcp-03-4a184603f259
```

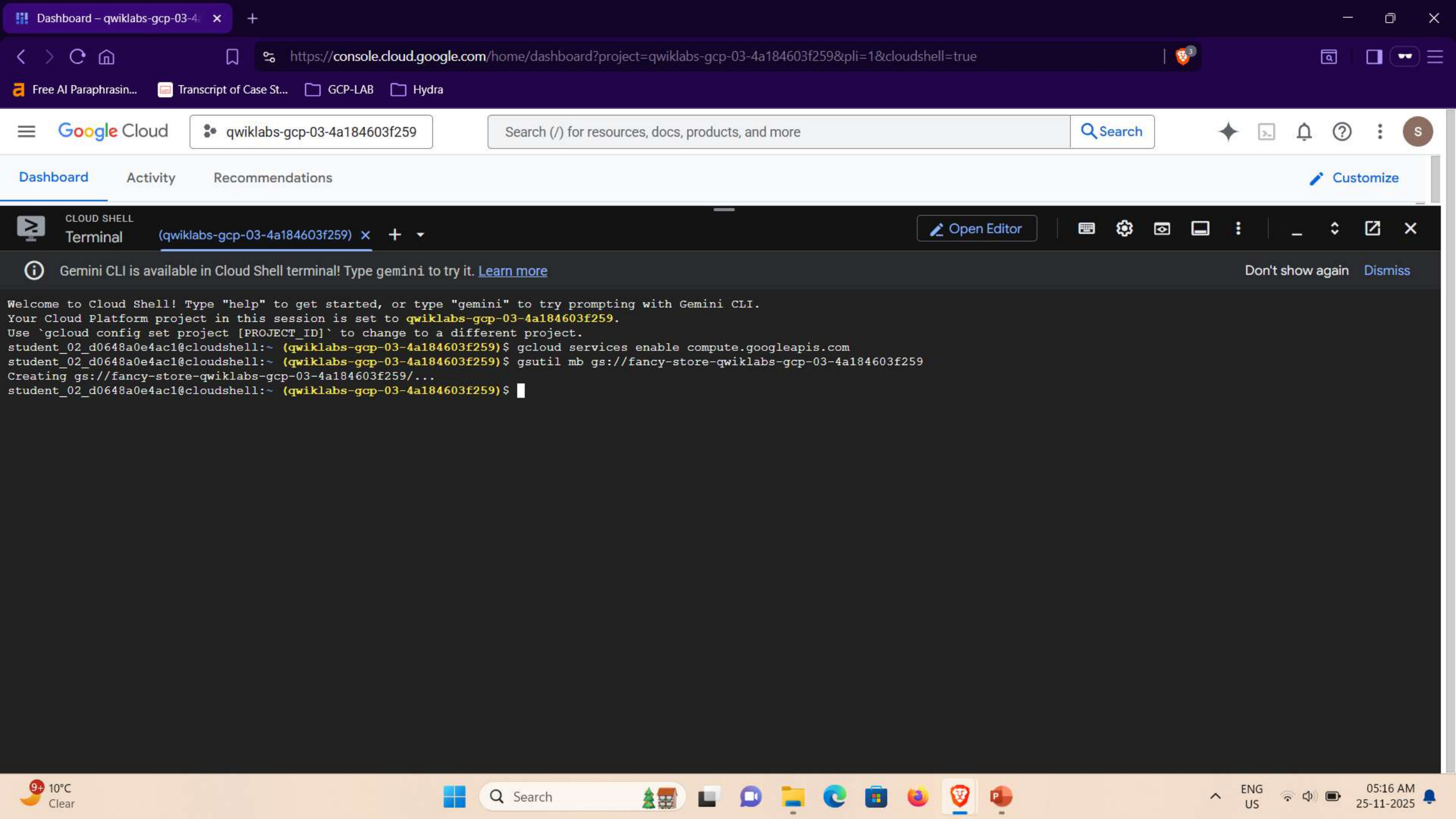
Copied!

Click **Check my progress** to verify the objective.

Create a Cloud Storage bucket

Check my progress

Task 3. Clone a source repository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CLOUD SHELL
Terminal
(qwiklabs-gcp-03-4a184603f259)
Open Editor
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Don't show again
Dismiss
Welcome to Cloud Shell! Type "help" to get started, or type "gemini" to try prompting with Gemini CLI.
Your Cloud Platform project in this session is set to qwiklabs-gcp-03-4a184603f259.
Use `gcloud config set project [PROJECT_ID]` to change to a different project.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud services enable compute.googleapis.com
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gsutil mb gs://fancy-store-qwiklabs-gcp-03-4a184603f259
Creating gs://fancy-store-qwiklabs-gcp-03-4a184603f259/...
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
10°C
Clear
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US
05:16 AM
25-11-2025

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Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 01:27:06

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Open Google Cloud console

Username

student-02-d0648a0e4ac1(

Password

EfZIE61lWJhP

Project ID

qwiklabs-gcp-03-4a18460(

Task 3. Clone a source repository

This lab uses the existing Fancy Store e-commerce website based on the `monolith-to-microservices` repository as the basis for your website.

In this task, you clone the source code so you can focus on the aspects of deploying to Compute Engine. Later on in this lab, you perform a small update to the code to demonstrate the simplicity of updating on Compute Engine.

1. Run the following commands to clone the source code and then navigate to the `monolith-to-microservices` directory:

```
git clone https://github.com/googlecodelabs/monolith-to-microservices.git
```

```
cd ~/monolith-to-microservices
```

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https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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```
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Use `gcloud config set project [PROJECT_ID]` to change to a different project.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud services enable compute.googleapis.com
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gsutil mb gs://fancy-store-qwiklabs-gcp-03-4a184603f259
Creating gs://fancy-store-qwiklabs-gcp-03-4a184603f259/...
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ git clone https://github.com/googlecodelabs/monolith-to-microservices.git
Cloning into 'monolith-to-microservices'...
remote: Enumerating objects: 1250, done.
remote: Counting objects: 100% (354/354), done.
remote: Compressing objects: 100% (146/146), done.
remote: Total 1250 (delta 310), reused 208 (delta 208), pack-reused 896 (from 1)
Receiving objects: 100% (1250/1250), 3.35 MiB | 17.78 MiB/s, done.
Resolving deltas: 100% (629/629), done.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

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```
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud services enable compute.googleapis.com
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gsutil mb gs://fancy-store-qwiklabs-gcp-03-4a184603f259
Creating gs://fancy-store-qwiklabs-gcp-03-4a184603f259/...
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ git clone https://github.com/googlecodelabs/monolith-to-microservices.git
Cloning into 'monolith-to-microservices'...
remote: Enumerating objects: 1250, done.
remote: Counting objects: 100% (354/354), done.
remote: Compressing objects: 100% (146/146), done.
remote: Total 1250 (delta 310), reused 208 (delta 208), pack-reused 896 (from 1)
Receiving objects: 100% (1250/1250), 3.35 MiB | 17.78 MiB/s, done.
Resolving deltas: 100% (629/629), done.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ cd ~/monolith-to-microservices
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ ./setup.sh
Installing monolith dependencies...

added 68 packages, and audited 69 packages in 3s

14 packages are looking for funding
  run `npm fund` for details

5 vulnerabilities (3 low, 2 high)

To address all issues, run:
  npm audit fix

Run `npm audit` for details.
npm notice
npm notice New patch version of npm available! 11.6.2 -> 11.6.3
npm notice Changelog: https://github.com/npm/cli/releases/tag/v11.6.3
npm notice To update run: npm install -g npm@11.6.3
npm notice
Completed.
```

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Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
npm notice New patch version of npm available! 11.6.2 -> 11.6.3
npm notice Changelog: https://github.com/npm/cli/releases/tag/v11.6.3
npm notice To update run: npm install -g npm@11.6.3
npm notice
Completed.

Installing microservices dependencies...

added 95 packages, and audited 96 packages in 6s

20 packages are looking for funding
  run `npm fund` for details

2 high severity vulnerabilities

To address all issues, run:
  npm audit fix

Run `npm audit` for details.
Completed.

Installing React app dependencies...
npm warn deprecated source-map-url@0.4.1: See https://github.com/lydell/source-map-url#deprecated
npm warn deprecated svgo@1.3.2: This SVGO version is no longer supported. Upgrade to v2.x.x.

added 1480 packages, and audited 1481 packages in 28s

205 packages are looking for funding
  run `npm fund` for details

34 vulnerabilities (4 low, 10 moderate, 18 high, 2 critical)
```

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Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
34 vulnerabilities (4 low, 10 moderate, 18 high, 2 critical)

To address issues that do not require attention, run:
  npm audit fix

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.
Completed.

Building React app and placing into sub projects...

> frontend@0.1.0 prebuild
> npm run build:monolith


> frontend@0.1.0 build:monolith
> env-cmd -f .env.monolith react-scripts build

(node:2143) [DEP0176] DeprecationWarning: fs.F_OK is deprecated, use fs.constants.F_OK instead
(Use `node --trace-deprecation ...` to show where the warning was created)
Creating an optimized production build...
Browserslist: caniuse-lite is outdated. Please run:
  npx update-browserslist-db@latest
  Why you should do it regularly: https://github.com/browserslist/update-db#readme
Compiled successfully.

File sizes after gzip:

  88.2 kB  build/static/js/main.4345c22d.js
```

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Dashboard – qwiklabs-gcp-03-4

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Dashboard | Activity | Recommendations | Customize

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Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
Compiled successfully.

File sizes after gzip:

  88.2 kB  build/static/js/main.4345c22d.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  npm install -g serve
  serve -s build

Find out more about deployment here:

  https://cra.link/deployment


> frontend@0.1.0 postbuild:monolith
> node scripts/post-build.js ./build ../monolith/public

Deleting stale folder: ../monolith/public
Deleted stale destination folder: ../monolith/public
Copying files from ./build to ../monolith/public
Copied ./build to ../monolith/public successfully!

> frontend@0.1.0 build
> react-scripts build

(node:2173) [DEP0176] DeprecationWarning: fs.F_OK is deprecated, use fs.constants.F_OK instead
```

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
> react-scripts build

(node:2173) [DEP0176] DeprecationWarning: fs.F_OK is deprecated, use fs.constants.F_OK instead
(Use `node --trace-deprecation ...` to show where the warning was created)
Creating an optimized production build...
Browserslist: caniuse-lite is outdated. Please run:
  npx update-browserslist-db@latest
  Why you should do it regularly: https://github.com/browserslist/update-db#readme
Compiled successfully.

File sizes after gzip:

  88.22 kB (+19 B)  build/static/js/main.e4fbf856.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  npm install -g serve
  serve -s build

Find out more about deployment here:

  https://cra.link/deployment


> frontend@0.1.0 postbuild
> node scripts/post-build.js ./build ../microservices/src/frontend/public

Deleting stale folder: ../microservices/src/frontend/public
```

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
  Why you should do it regularly: https://github.com/browserslist/update-db#readme
Compiled successfully.

File sizes after gzip:

  88.22 kB (+19 B)  build/static/js/main.e4fbf856.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  npm install -g serve
  serve -s build

Find out more about deployment here:

  https://cra.link/deployment


> frontend@0.1.0 postbuild
> node scripts/post-build.js ./build ../microservices/src/frontend/public

Deleting stale folder: ../microservices/src/frontend/public
Deleted stale destination folder: ../microservices/src/frontend/public
Copying files from ./build to ../microservices/src/frontend/public
Copied ./build to ../microservices/src/frontend/public successfully!
Completed.

Setup completed successfully!
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$
```

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Lab setup instructions and requirements

End Lab 01:23:48

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Open Google Cloud console

Username
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
./setup.sh
```

It takes a few minutes for this script to finish.

3. Once completed, ensure Cloud Shell is running a compatible nodeJS version with the following command:

```
nvm install --lts
```

4. Next, run the following to test the application, switch to the `microservices` directory, and start the web server:

```
cd microservices
npm start
```

You should receive the following output.

Output:

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

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```
  88.22 kB (+19 B)  build/static/js/main.e4fbf856.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  npm install -g serve
  serve -s build

Find out more about deployment here:

  https://cra.link/deployment


> frontend@0.1.0 postbuild
> node scripts/post-build.js ./build ../microservices/src/frontend/public

Deleting stale folder: ../microservices/src/frontend/public
Deleted stale destination folder: ../microservices/src/frontend/public
Copying files from ./build to ../microservices/src/frontend/public
Copied ./build to ../microservices/src/frontend/public successfully!
Completed.

Setup completed successfully!
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ nvm install --lts
Installing latest LTS version.
v24.11.1 is already installed.
Now using node v24.11.1 (npm v11.6.2)
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$
```

Air: Poor
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Dashboard – qwiklabs-gcp-03-4

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```
Deleted stale destination folder: ../microservices/src/frontend/public
Copying files from ./build to ../microservices/src/frontend/public
Copied ./build to ../microservices/src/frontend/public successfully!
Completed.

Setup completed successfully!
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ nvm install --lts
Installing latest LTS version.
v24.11.1 is already installed.
Now using node v24.11.1 (npm v11.6.2)
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ cd microservices
npm start

> microservices@1.0.0 start
> concurrently "npm run frontend" "npm run products" "npm run orders"

[0]
[0] > microservices@1.0.0 frontend
[0] > node ./src/frontend/server.js
[0]
[2]
[2] > microservices@1.0.0 orders
[2] > node ./src/orders/server.js
[2]
[1]
[1] > microservices@1.0.0 products
[1] > node ./src/products/server.js
[1]
[2] Orders microservice listening on port 8081!
[0] Frontend microservice listening on port 8080!
[1] Products microservice listening on port 8082!
```

Air: Poor
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Dashboard – qwiklabs-gcp-03-4

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259)

Open Editor

Preview on port 8080
Change port
About web preview

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more

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```
Deleted stale destination folder: ../microservices/src/frontend/public
Copying files from ./build to ../microservices/src/frontend/public
Copied ./build to ../microservices/src/frontend/public successfully!
Completed.

Setup completed successfully!
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ nvm install --lts
Installing latest LTS version.
v24.11.1 is already installed.
Now using node v24.11.1 (npm v11.6.2)
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ cd microservices
npm start

> microservices@1.0.0 start
> concurrently "npm run frontend" "npm run products" "npm run orders"

[0]
[0] > microservices@1.0.0 frontend
[0] > node ./src/frontend/server.js
[0]
[2]
[2] > microservices@1.0.0 orders
[2] > node ./src/orders/server.js
[2]
[1]
[1] > microservices@1.0.0 products
[1] > node ./src/products/server.js
[1]
[2] Orders microservice listening on port 8081!
[0] Frontend microservice listening on port 8080!
[1] Products microservice listening on port 8082!
```

Air: Very poor
Now

Search

ENG
US

05:21 AM
25-11-2025

Dashboard – qwiklabs-gcp-03-4a1...

Fancy Store

https://8080-cs-42264801736-default.ql-asia-southeast1-jury.cloudshell.dev

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

Fancy Store

- Home
- Products
- Orders

Welcome to the Fancy Store!

Take a look at our wide variety of products.

Air: Very poor
Now

Search

ENG
US

05:22 AM
25-11-2025

terminal window to stop the web server process.

Lab setup instructions and requirements

End Lab 01:21:55

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

student-02-d0648a0e4ac1(

Password

EfZIE61lWJhP

Project ID

qwiklabs-gcp-03-4a18460(

Enable Gemini Code Assist in the Cloud Shell IDE

You can use Gemini Code Assist in an integrated development environment (IDE) such as Cloud Shell to receive guidance on code or solve problems with your code. Before you can start using Gemini Code Assist, you need to enable it.

1. In Cloud Shell, enable the **Gemini for Google Cloud** API with the following command:

```
gcloud services enable cloudaicompanion.googleapis.com
```

2. Click **Open Editor** on the Cloud Shell toolbar.

Note: To open the Cloud Shell Editor, click **Open Editor** on the Cloud Shell toolbar. You can switch between Cloud Shell and the code Editor by clicking **Open Editor** or **Open Terminal**, as required.

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

Dashboard | Activity | Recommendations | Customize

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

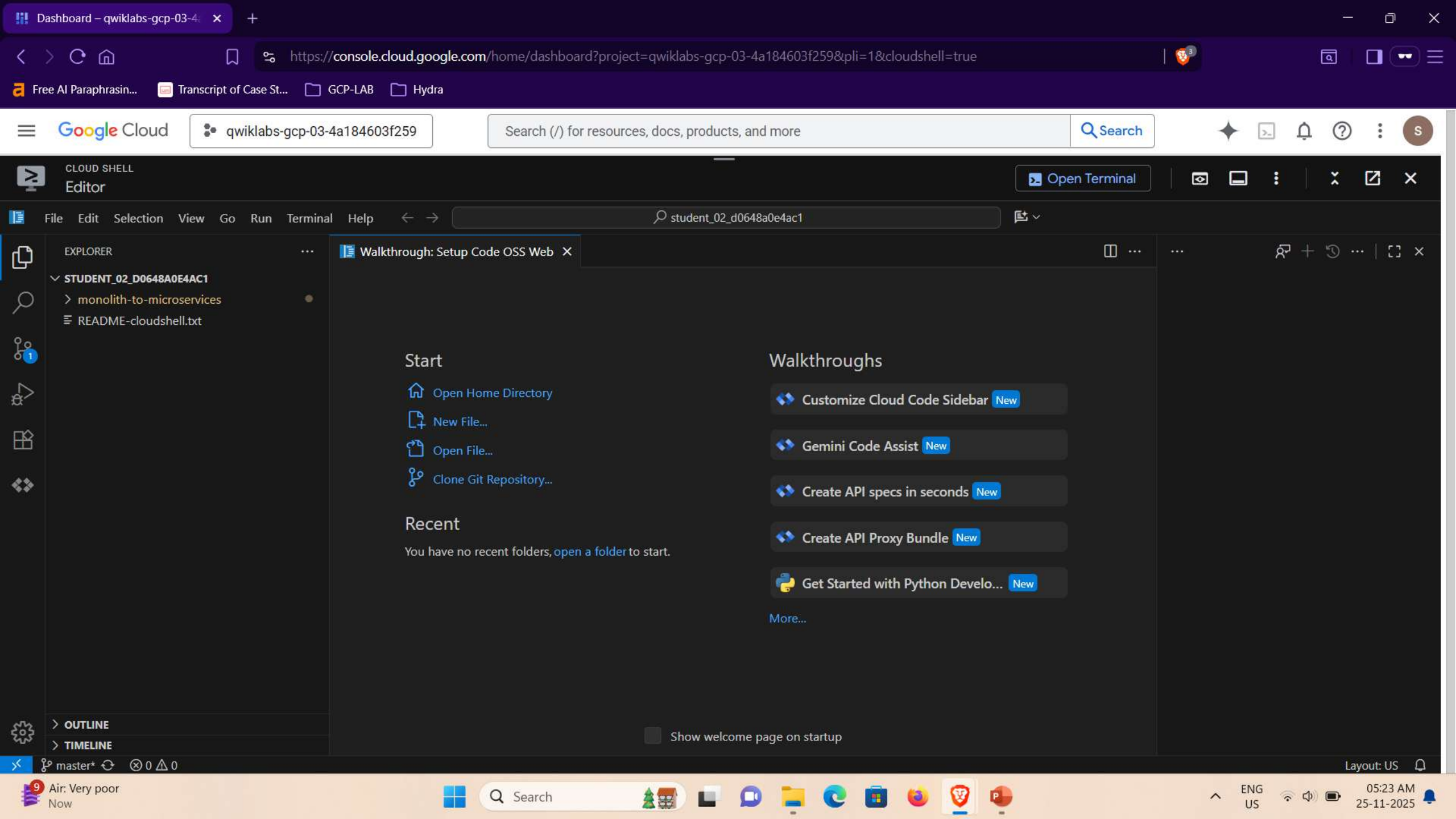
Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
Setup completed successfully!
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ nvm install --lts
Installing latest LTS version.
v24.11.1 is already installed.
Now using node v24.11.1 (npm v11.6.2)
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ cd microservices
npm start

> microservices@1.0.0 start
> concurrently "npm run frontend" "npm run products" "npm run orders"

[0]
[0] > microservices@1.0.0 frontend
[0] > node ./src/frontend/server.js
[0]
[2]
[2] > microservices@1.0.0 orders
[2] > node ./src/orders/server.js
[2]
[1]
[1] > microservices@1.0.0 products
[1] > node ./src/products/server.js
[1]
[2] Orders microservice listening on port 8081!
[0] Frontend microservice listening on port 8080!
[1] Products microservice listening on port 8082!
^C[2] npm run orders exited with code SIGINT
[0] npm run frontend exited with code SIGINT
[1] npm run products exited with code SIGINT
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$ gcloud services enable cloudaicompanion.googleapis.com
Operation "operations/acat.p2-583921627352-d05198bd-4d57-4645-91da-7407e08f0d33" finished successfully.
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$
```

Air: Very poor Now | Search | ENG US | 05:23 AM 25-11-2025


Dashboard – qwiklabs-gcp-03-4
https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true
Free AI Paraphrasin...
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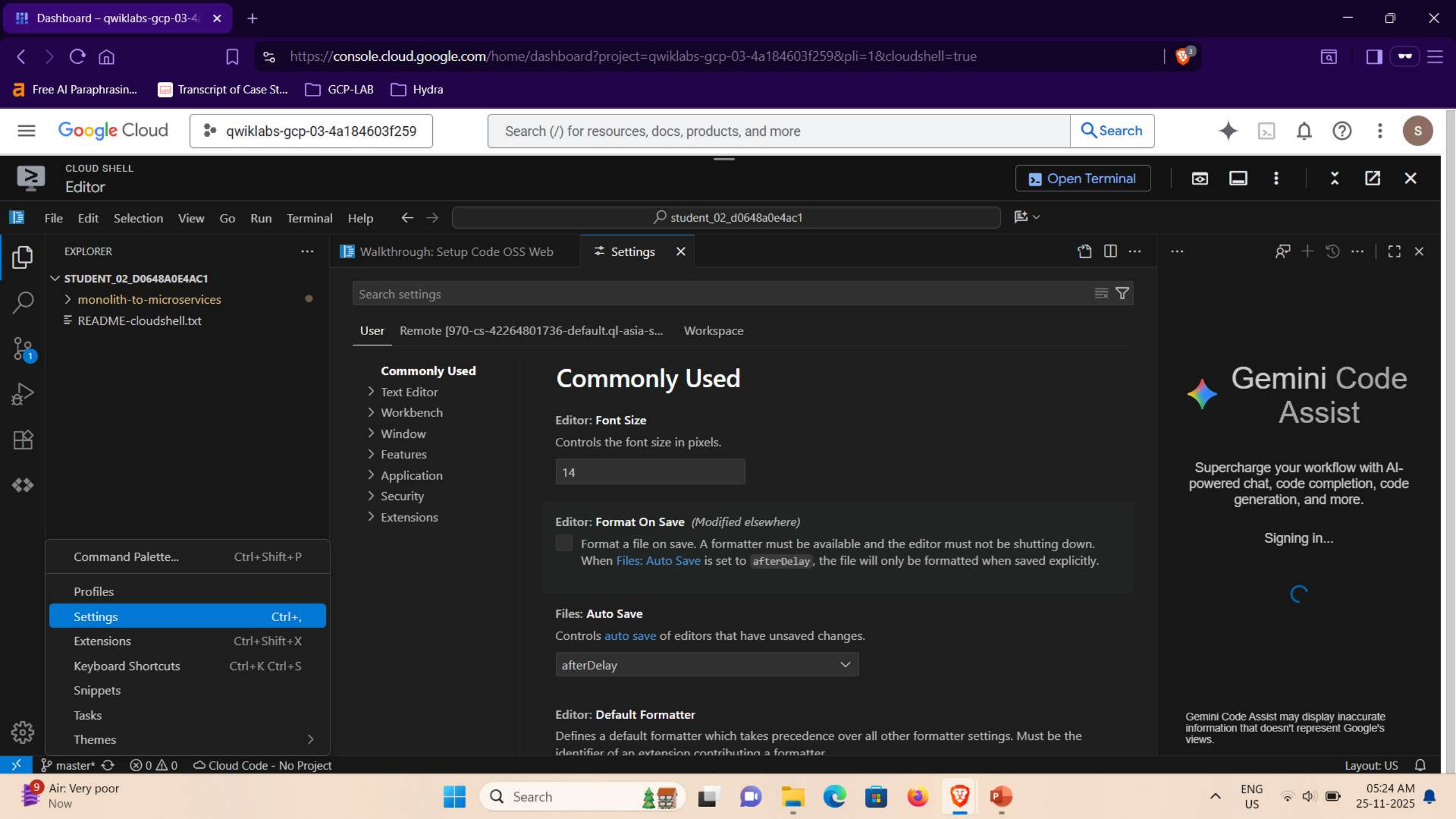
GCP-LAB
Hydra
Google Cloud
qwiklabs-gcp-03-4a184603f259
Search (/) for resources, docs, products, and more
Search
CLOUD SHELL
Editor
Open Terminal
File Edit Selection View Go Run Terminal Help
student_02_d0648a0e4ac1
EXPLORER
STUDENT_02_D0648A0E4AC1
monolith-to-microservices
README-cloudshell.txt
Walkthrough: Setup Code OSS Web
Start
Open Home Directory
New File...
Open File...
Clone Git Repository...
Recent
You have no recent folders, open a folder to start.
Walkthroughs
Customize Cloud Code Sidebar New
Gemini Code Assist New
Create API specs in seconds New
Create API Proxy Bundle New
Get Started with Python Develo... New
More...
Show welcome page on startup
OUTLINE
TIMELINE
master*
0 0
Layout: US
Air: Very poor
Now
Search
ENG
US
05:23 AM
25-11-2025


Dashboard – qwiklabs-gcp-03-4
https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true
Free AI Paraphrasin...
Transcript of Case St...
GCP-LAB
Hydra
Google Cloud
qwiklabs-gcp-03-4a184603f259
Search (/) for resources, docs, products, and more
Search
CLOUD SHELL
Editor
Open Terminal
File Edit Selection View Go Run Terminal Help
student_02_d0648a0e4ac1
EXPLORER
STUDENT_02_D0648A0E4AC1
monolith-to-microservices
README-cloudshell.txt
Walkthrough: Setup Code OSS Web
Settings
Search settings
User
Remote [970-cs-42264801736-default.ql-asia-s...
Workspace
Commonly Used
Text Editor
Workbench
Window
Features
Application
Security
Extensions
Commonly Used
Editor: Font Size
Controls the font size in pixels.
14
Editor: Format On Save (Modified elsewhere)
Format a file on save. A formatter must be available and the editor must not be shutting down. When Files: Auto Save is set to afterDelay, the file will only be formatted when saved explicitly.
Files: Auto Save
Controls auto save of editors that have unsaved changes.
afterDelay
Editor: Default Formatter
Defines a default formatter which takes precedence over all other formatter settings. Must be the identifier of an extension contributing a formatter
Command Palette... Ctrl+Shift+P
Profiles
Settings Ctrl+,
Extensions Ctrl+Shift+X
Keyboard Shortcuts Ctrl+K Ctrl+S
Snippets
Tasks
Themes
Gemini Code Assist
Supercharge your workflow with AI-powered chat, code completion, code generation, and more.
Signing in...
Gemini Code Assist may display inaccurate information that doesn't represent Google's views.
master*
0 0
Cloud Code - No Project
Layout: US
Air: Very poor
Now
Search
ENG
US
05:24 AM
25-11-2025

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Editor

Open Terminal

File Edit Selection View Go Run Terminal Help

student_02_d0648a0e4ac1

EXPLORER

STUDENT_02_D0648A0E4AC1
monolith-to-microservices
README-cloudshell.txt

OUTLINE
TIMELINE

Walkthrough: Setup Code OSS Web | Settings

Gemini Code Assist — 28 Settings Found

User | Remote [970-cs-42264801736-default.ql-asia-s... | Workspace

Commonly Used (1)
Text Editor (2)
Features (1)
Notebook (1)
Extensions (25)
Gemini Code Assist (24)
Google Cloud Code (1)

Geminicodeassist › Chat: Default Code Block Display
Choose the default display mode for code blocks in chat.
Note: Changing this setting requires a reload of VS Code. Click here to reload.
Preview

Geminicodeassist: Code Generation Pane View Enabled
Enable the panel view interface shown when generating code via the 'Ctrl+Enter' hotkey. When enabled, this will result in code generation suggestions being opened in a separate tab in the editor. While disabled, this will result in suggestions rendering in the editor via ghost text.

Geminicodeassist: Local Codebase Awareness
Local codebase awareness improves the relevance of Gemini Code Assist's responses through indexing and supporting techniques.

Geminicodeassist › Agent: Additional Trusted Certificates
Specify if you have custom certificate authorities.

Hello, student
How can Gemini help?

Tips for getting started

Open a file, get code suggestions as you type, and press tab to accept

Press ctrl/cmd+i to ask Gemini to create or modify code

Select code in the editor to reveal additional Gemini actions, such as ***Explain Code***

master* | 0 0 | Cloud Code - No Project | Layout: US

Trending videos
Stranger Things...

Search

ENG US | 05:25 AM 25-11-2025

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Editor

Open Terminal

File Edit Selection View Go Run Terminal Help

student_02_d0648a0e4ac1

EXPLORER

STUDENT_02_D0648A0E4AC1

monolith-to-microservices

README-cloudshell.txt

OUTLINE

TIMELINE

Walkthrough: Setup Code OSS Web

Settings

Gemini Code Assist

28 Settings Found

User | Remote [970-cs-42264801736-default.ql-asia-s... | Workspace

Commonly Used (1)

Text Editor (2)

Features (1)

Notebook (1)

Extensions (25)

Gemini Code Assist (24)

Google Cloud Code (1)

Geminicodeassist: Display Inline Context Hint

Display a 'Pin to context' hint inline when text in the editor is highlighted.

Geminicodeassist: Enable

Enable Gemini Code Assist. Gemini Code Assist is your AI-powered collaborator to help you accomplish tasks more efficiently. Learn more

Note: Changing this setting requires a reload of VS Code. Click here to reload.

Geminicodeassist: Enable Telemetry

Enable sending usage statistics and crash reports to Google to improve its products and services.

Usage statistics are subject to the Google Privacy Policy.

This setting does not implicate Google's use of your prompts, context code, and responses to train AI models.

Gemini Code Assist Standard and Enterprise editions never use your prompts, context code, or responses to train machine learning models. Similarly, if you are using Gemini

Hello, student

How can Gemini help?

Tips for getting started

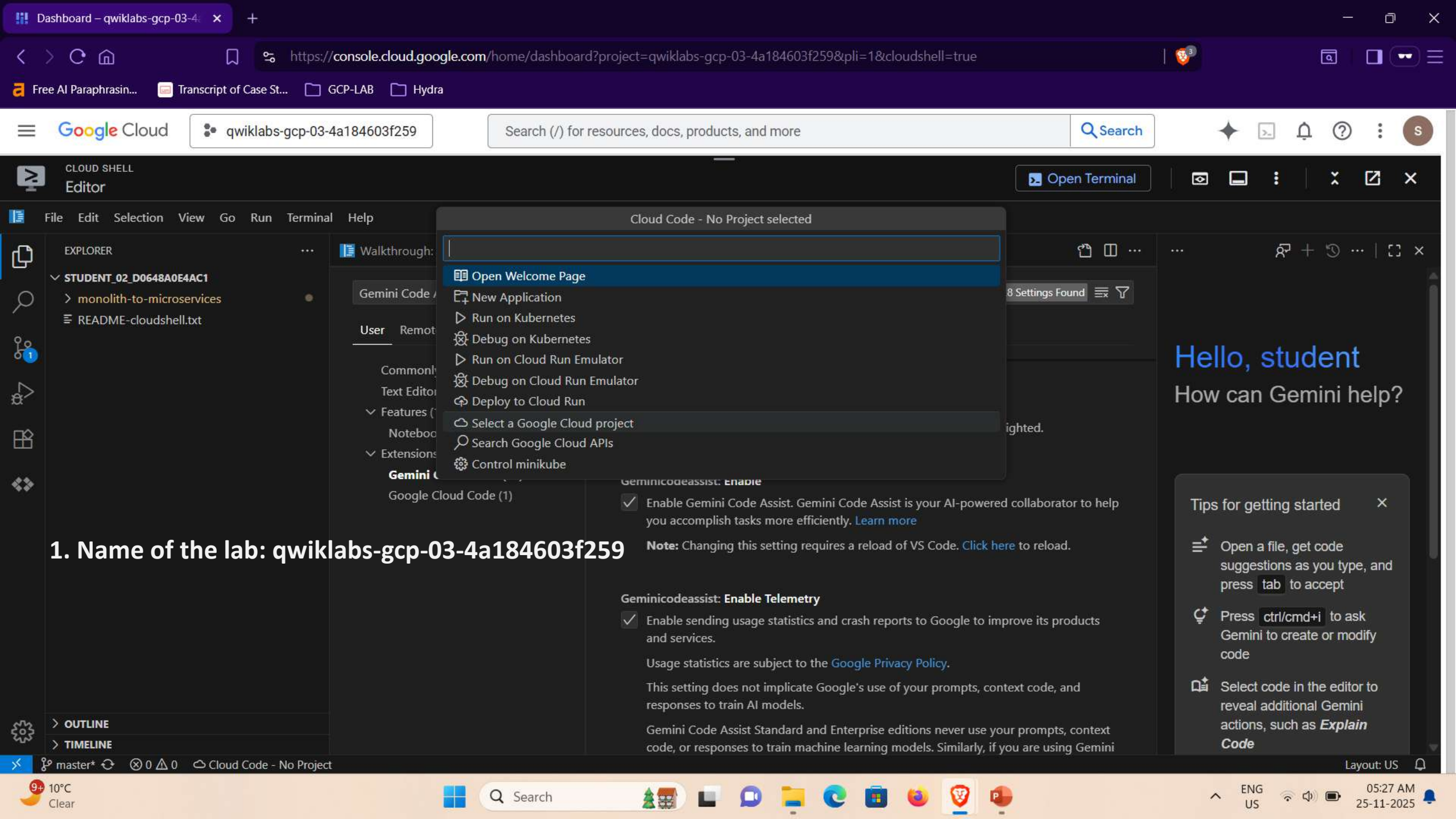
Open a file, get code suggestions as you type, and press tab to accept

Press ctrl/cmd+i to ask Gemini to create or modify code

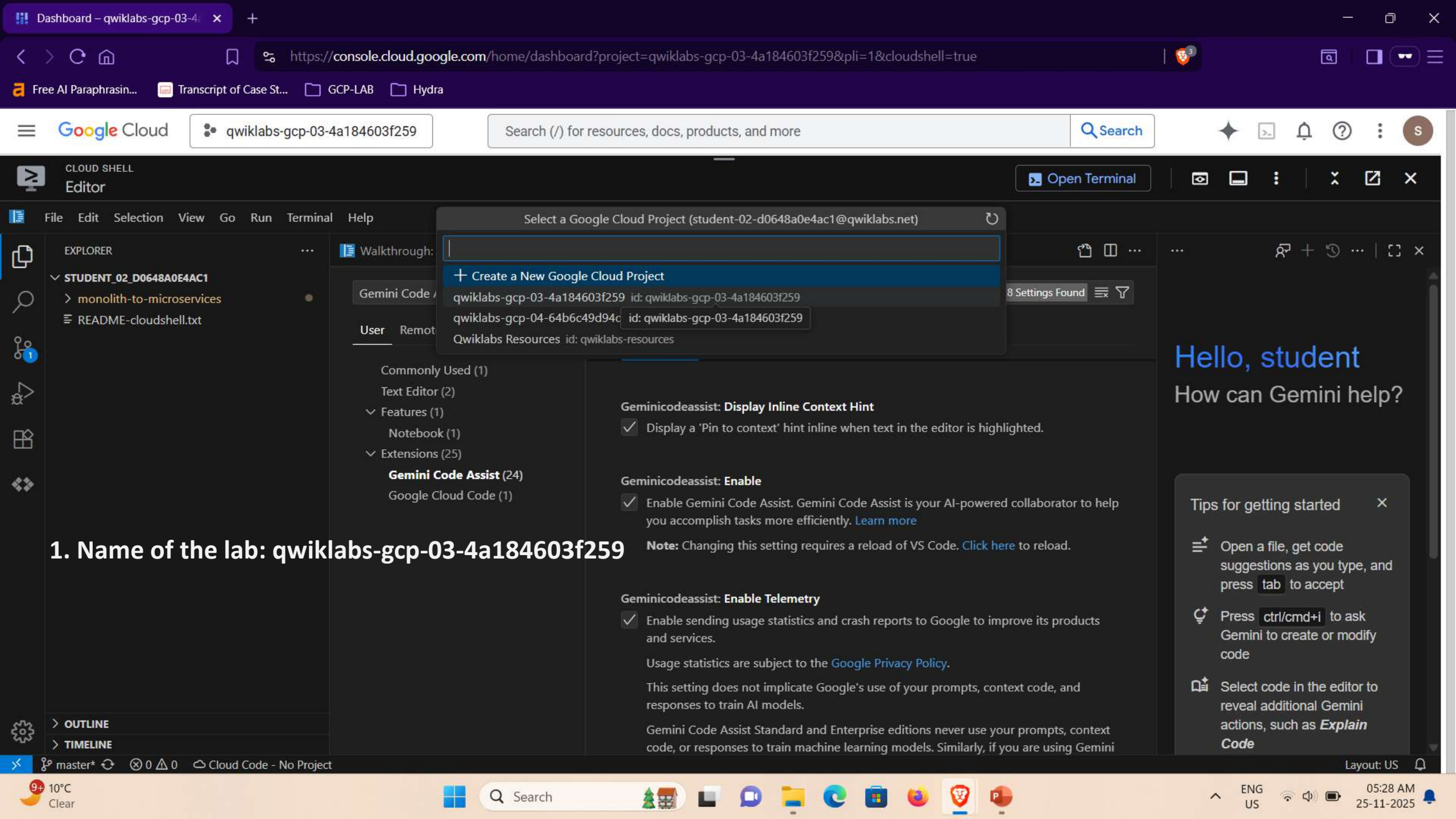
Select code in the editor to reveal additional Gemini actions, such as ***Explain Code***

master* | 0 0 | Cloud Code - No Project | Layout: US

10°C Clear | Search | ENG US | 05:26 AM 25-11-2025



1. Name of the lab: qwiklabs-gcp-03-4a184603f259


Dashboard – qwiklabs-gcp-03-4
https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true
Free AI Paraphrasin...
Transcript of Case St...
GCP-LAB
Hydra
Google Cloud
qwiklabs-gcp-03-4a184603f259
Search (/) for resources, docs, products, and more
Search
CLOUD SHELL
Editor
Open Terminal
File Edit Selection View Go Run Terminal Help
Select a Google Cloud Project (student-02-d0648a0e4ac1@qwiklabs.net)
Create a New Google Cloud Project
qwiklabs-gcp-03-4a184603f259 id: qwiklabs-gcp-03-4a184603f259
qwiklabs-gcp-04-64b6c49d94c id: qwiklabs-gcp-03-4a184603f259
Qwiklabs Resources id: qwiklabs-resources
EXPLORER
STUDENT_02_D0648A0E4AC1
monolith-to-microservices
README-cloudshell.txt
Walkthrough:
Gemini Code
8 Settings Found
User
Commonly Used (1)
Text Editor (2)
Features (1)
Notebook (1)
Extensions (25)
Gemini Code Assist (24)
Google Cloud Code (1)
Geminicodeassist: Display Inline Context Hint
Display a 'Pin to context' hint inline when text in the editor is highlighted.
Geminicodeassist: Enable
Enable Gemini Code Assist. Gemini Code Assist is your AI-powered collaborator to help you accomplish tasks more efficiently. Learn more
Note: Changing this setting requires a reload of VS Code. Click here to reload.
Geminicodeassist: Enable Telemetry
Enable sending usage statistics and crash reports to Google to improve its products and services.
Usage statistics are subject to the Google Privacy Policy.
This setting does not implicate Google's use of your prompts, context code, and responses to train AI models.
Gemini Code Assist Standard and Enterprise editions never use your prompts, context code, or responses to train machine learning models. Similarly, if you are using Gemini
Hello, student
How can Gemini help?
Tips for getting started
Open a file, get code suggestions as you type, and press tab to accept
Press ctrl/cmd+i to ask Gemini to create or modify code
Select code in the editor to reveal additional Gemini actions, such as Explain Code
1. Name of the lab: qwiklabs-gcp-03-4a184603f259
OUTLINE
TIMELINE
master*
0 0
Cloud Code - No Project
Layout: US
10°C
Clear
Search
ENG
US
05:28 AM
25-11-2025

Contents

Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 01:15:49

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

student-02-d0648a0e4ac1(

Password

EfZIE61lWJhP

Project ID

qwiklabs-gcp-03-4a18460(

Task 4. Create the Compute Engine instances

Now it's time to start deploying some Compute Engine instances!

In the sections that follow, you perform the following actions:

1. Create a startup script to configure instances.
2. Clone source code and upload to Cloud Storage.
3. Deploy a Compute Engine instance to host the backend microservices.
4. Reconfigure the frontend code to utilize the backend microservices instance.
5. Deploy a Compute Engine instance to host the frontend microservice.
6. Configure the network to allow communication.

Create the startup script

10/100

Lab instructions and tasks

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
Copied ./build to ../microservices/src/frontend/public successfully!
Completed.

Setup completed successfully!
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ nvm install --lts
Installing latest LTS version.
v24.11.1 is already installed.
Now using node v24.11.1 (npm v11.6.2)
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ cd microservices
npm start

> microservices@1.0.0 start
> concurrently "npm run frontend" "npm run products" "npm run orders"

[0]
[0] > microservices@1.0.0 frontend
[0] > node ./src/frontend/server.js
[0]
[2]
[2] > microservices@1.0.0 orders
[2] > node ./src/orders/server.js
[2]
[1]
[1] > microservices@1.0.0 products
[1] > node ./src/products/server.js
[1]
[2] Orders microservice listening on port 8081!
[0] Frontend microservice listening on port 8080!
[1] Products microservice listening on port 8082!
^C[2] npm run orders exited with code SIGINT
[0] npm run frontend exited with code SIGINT
[1] npm run products exited with code SIGINT
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$ gcloud services enable cloudaicompanion.googleapis.com
Operation "operations/acat.p2-583921627352-d05198bd-4d57-4645-91da-7407e08f0d33" finished successfully.
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$ touch ~/monolith-to-microservices/startup-script.sh
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$
```

10°C Clear | Search | ENG US | 05:29 AM 25-11-2025

Contents

Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 01:13:47

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

student-02-d0648a0e4ac1(

Password

EfZIE61lWJhP

Project ID

qwiklabs-gcp-03-4a18460(

```
touch ~/monolith-to-microservices/startup-script.sh
```

2. Click **Open Editor** in the Cloud Shell toolbar to open the Code Editor.

3. Navigate to the **monolith-to-microservices** folder.

4. Add the following code to the `startup-script.sh` file. Later on, you edit some of the code after it's added:

```
#!/bin/bash

# Install logging monitor. The monitor will automatically pick up l
# syslog.
curl -s "https://storage.googleapis.com/signals-agents/logging/goo
service google-fluentd restart &
```

10/100

Lab instructions and tasks

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Editor

Open Terminal

File Edit Selection View Go Run Terminal Help

student_02_d0648a0e4ac1

EXPLORER

STUDENT_02_D0648A0E4AC1

- monolith-to-microservices
  - microservices
  - monolith
  - react-app
  - CONTRIBUTING.md
  - deploy-monolith.sh
  - LICENSE
  - package-lock.json
  - README.md
  - setup.sh
  - startup-script.sh U
- README-cloudshell.txt

OUTLINE

TIMELINE

Walkthrough: Setup Code OSS Web | startup-script.sh U

monolith-to-microservices > startup-script.sh

```
#!/bin/bash

# Install logging monitor. The monitor will automatically pick up logs sent to
# syslog.
curl -s "https://storage.googleapis.com/signals-agents/logging/google-fluentd-install.sh" | bash
service google-fluentd restart &

# Install dependencies from apt
apt-get update
apt-get install -yq ca-certificates git build-essential supervisor psmisc

# Install nodejs
mkdir /opt/nodejs
curl https://nodejs.org/dist/v16.14.0/node-v16.14.0-linux-x64.tar.gz | tar xvzf - -C /opt/nodejs --strip-components=1
ln -s /opt/nodejs/bin/node /usr/bin/node
ln -s /opt/nodejs/bin/npm /usr/bin/npm

# Get the application source code from the Google Cloud Storage bucket.
mkdir /fancy-store
gsutil -m cp -r gs://fancy-store-[DEVSHELL_PROJECT_ID]/monolith-to-microservices/microservices/* /fancy-store/

# Install app dependencies.
cd /fancy-store/
npm install

# Create a nodeapp user. The application will run as this user.
```

master* | 0 0 | qwiklabs-gcp-03-4a184603f259 | Ln 42, Col 1 | Spaces: 4 | UTF-8 | LF | Shell Script | Layout: US

10°C Clear | Search | ENG US | 05:31 AM 25-11-2025

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Editor

Open Terminal

File Edit Selection View Go Run Terminal Help

student_02_d0648a0e4ac1

EXPLORER

STUDENT_02_D0648A0E4AC1

- monolith-to-microservices
  - microservices
  - monolith
  - react-app
  - CONTRIBUTING.md
  - deploy-monolith.sh
  - LICENSE
  - package-lock.json
  - README.md
  - setup.sh
  - startup-script.sh U
- README-cloudshell.txt

OUTLINE

TIMELINE

Walkthrough: Setup Code OSS Web

startup-script.sh U

monolith-to-microservices > startup-script.sh

```
25
26  # Create a nodeapp user. The application will run as this user.
27  useradd -m -d /home/nodeapp nodeapp
28  chown -R nodeapp:nodeapp /opt/app
29
30  # Configure supervisor to run the node app.
31  cat >/etc/supervisor/conf.d/node-app.conf << EOF
32  [program:nodeapp]
33  directory=/fancy-store
34  command=npm start
35  autostart=true
36  autorestart=true
37  user=nodeapp
38  environment=HOME="/home/nodeapp",USER="nodeapp",NODE_ENV="production"
39  stdout_logfile=syslog
40  stderr_logfile=syslog
41  EOF
42
43  supervisorctl reread
44  supervisorctl update
```

master* | 0 0 | qwiklabs-gcp-03-4a184603f259 | Ln 42, Col 1 | Spaces: 4 | UTF-8 | LF | Shell Script | Layout: US

10°C Clear | Search | ENG US | 05:31 AM 25-11-2025

Lab setup instructions and requirements

End Lab 01:12:43

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
supervisorctl reread
supervisorctl update
```

5. To update the `startup-script.sh` file, click the **Gemini Code Assist: Smart Actions** ✦ icon, and paste the following into the prompt to find and replace the text for `[DEVSHELL_PROJECT_ID]`.

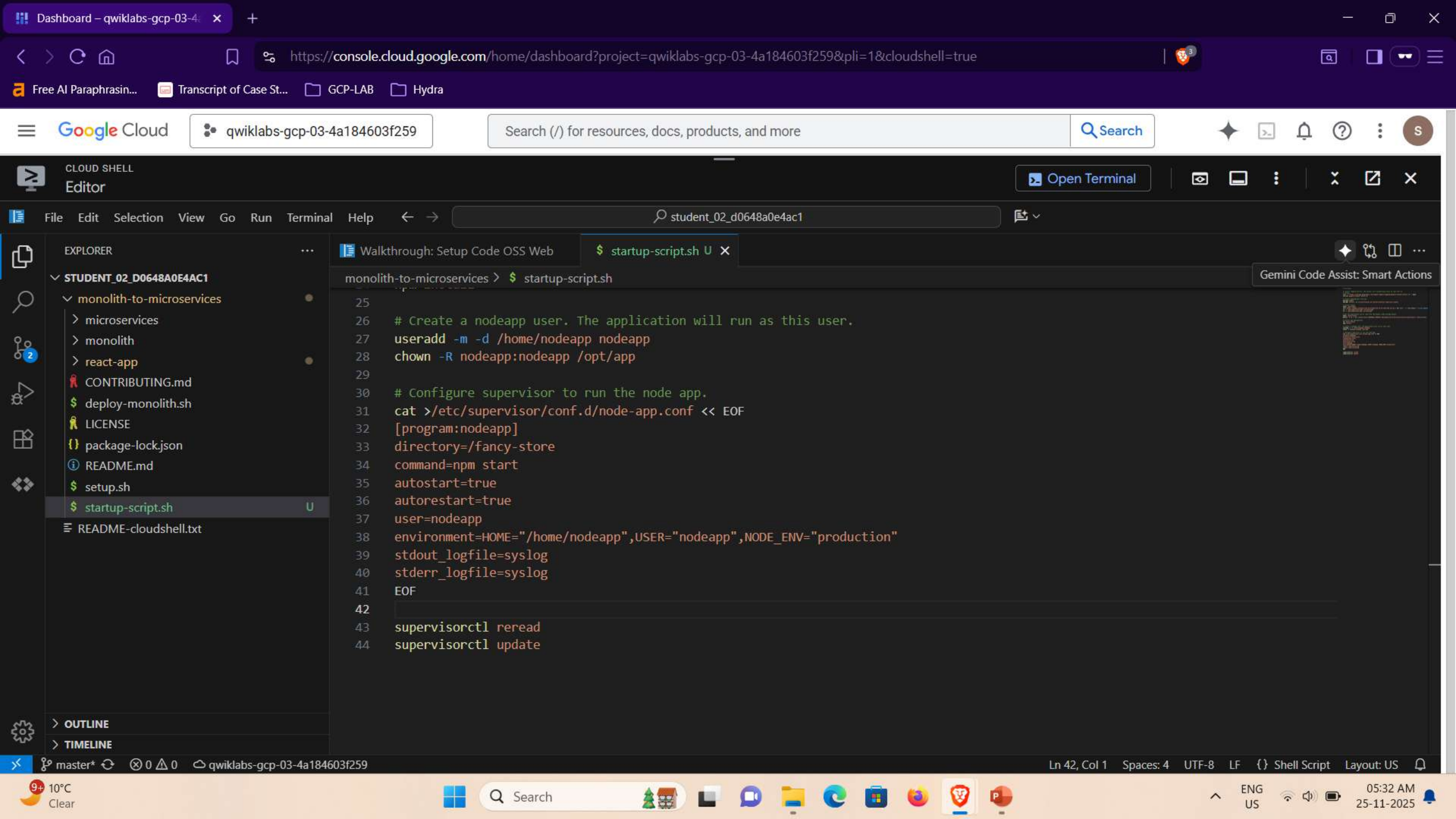
```
As an application developer at Cymbal AI, update the "startup-
script.sh" file. Replace [DEVSHELL_PROJECT_ID] with the project
ID: qwiklabs-gcp-03-4a184603f259.
```

6. Press **Enter** to update the file. When prompted in the **Gemini Diff** view, click **Accept**.

The line of code within `startup-script.sh` should now resemble the following:

```
gs://fancy-store-qwiklabs-gcp-03-4a184603f259/monolith-to-
microservices/microservices/* /fancy-store/
```

10/100


Dashboard – qwiklabs-gcp-03-4
https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true
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startup-script.sh U
monolith-to-microservices > startup-script.sh
Gemini Code Assist: Smart Actions
25
26 # Create a nodeapp user. The application will run as this user.
27 useradd -m -d /home/nodeapp nodeapp
28 chown -R nodeapp:nodeapp /opt/app
29
30 # Configure supervisor to run the node app.
31 cat >/etc/supervisor/conf.d/node-app.conf << EOF
32 [program:nodeapp]
33 directory=/fancy-store
34 command=npm start
35 autostart=true
36 autorestart=true
37 user=nodeapp
38 environment=HOME="/home/nodeapp",USER="nodeapp",NODE_ENV="production"
39 stdout_logfile=syslog
40 stderr_logfile=syslog
41 EOF
42
43 supervisorctl reread
44 supervisorctl update
master*
0 0
qwiklabs-gcp-03-4a184603f259
Ln 42, Col 1
Spaces: 4
UTF-8
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Shell Script
Layout: US
10°C
Clear
Search
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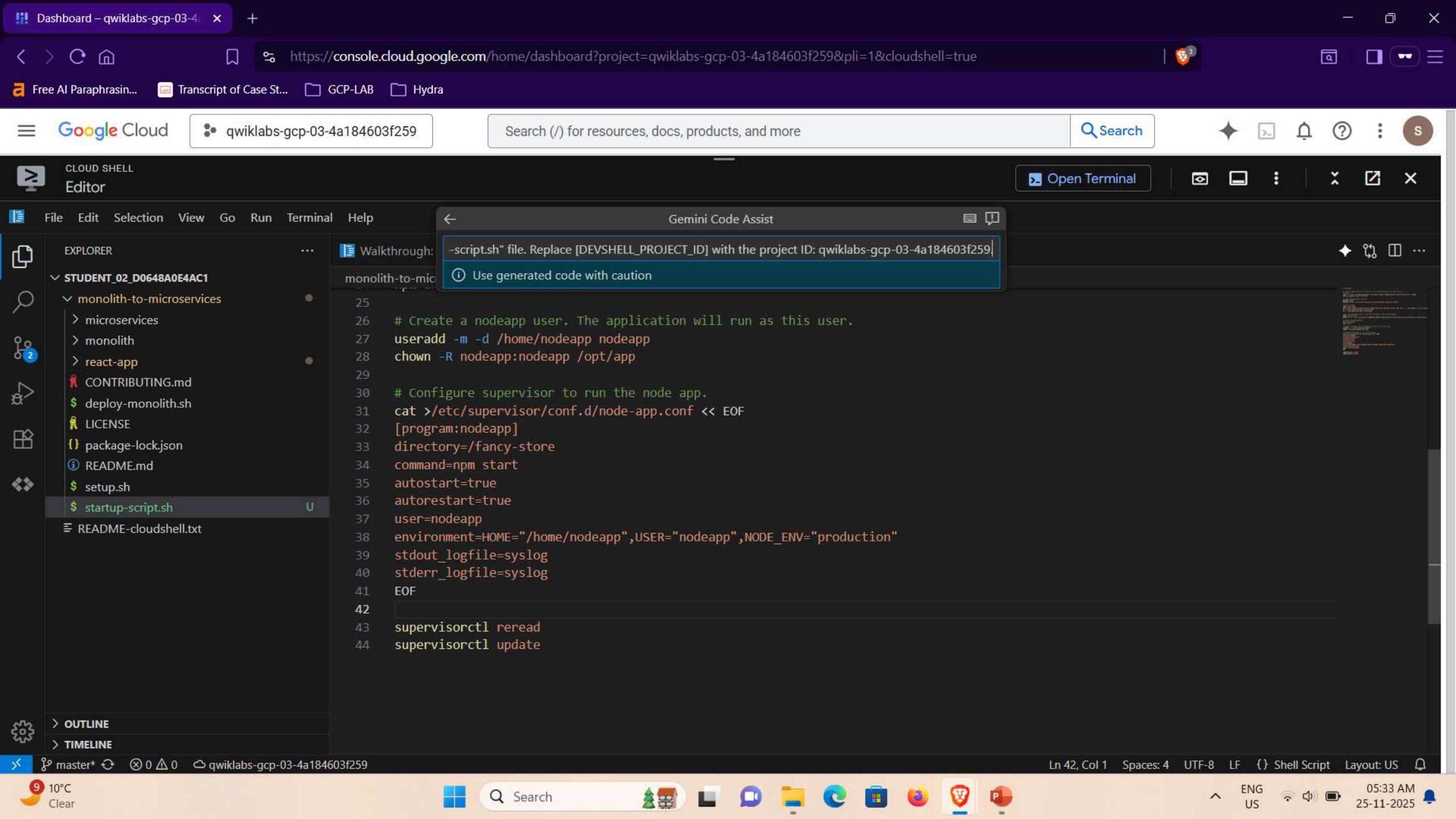
Dashboard – qwiklabs-gcp-03-4
https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true
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Gemini Code Assist
-script.sh" file. Replace [DEVSHELL_PROJECT_ID] with the project ID: qwiklabs-gcp-03-4a184603f259
Use generated code with caution
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25
26 # Create a nodeapp user. The application will run as this user.
27 useradd -m -d /home/nodeapp nodeapp
28 chown -R nodeapp:nodeapp /opt/app
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30 # Configure supervisor to run the node app.
31 cat >/etc/supervisor/conf.d/node-app.conf << EOF
32 [program:nodeapp]
33 directory=/fancy-store
34 command=npm start
35 autostart=true
36 autorestart=true
37 user=nodeapp
38 environment=HOME="/home/nodeapp",USER="nodeapp",NODE_ENV="production"
39 stdout_logfile=syslog
40 stderr_logfile=syslog
41 EOF
42
43 supervisorctl reread
44 supervisorctl update
master*
0 0
qwiklabs-gcp-03-4a184603f259
Ln 42, Col 1
Spaces: 4
UTF-8
LF
Shell Script
Layout: US
10°C
Clear
Search
ENG
US
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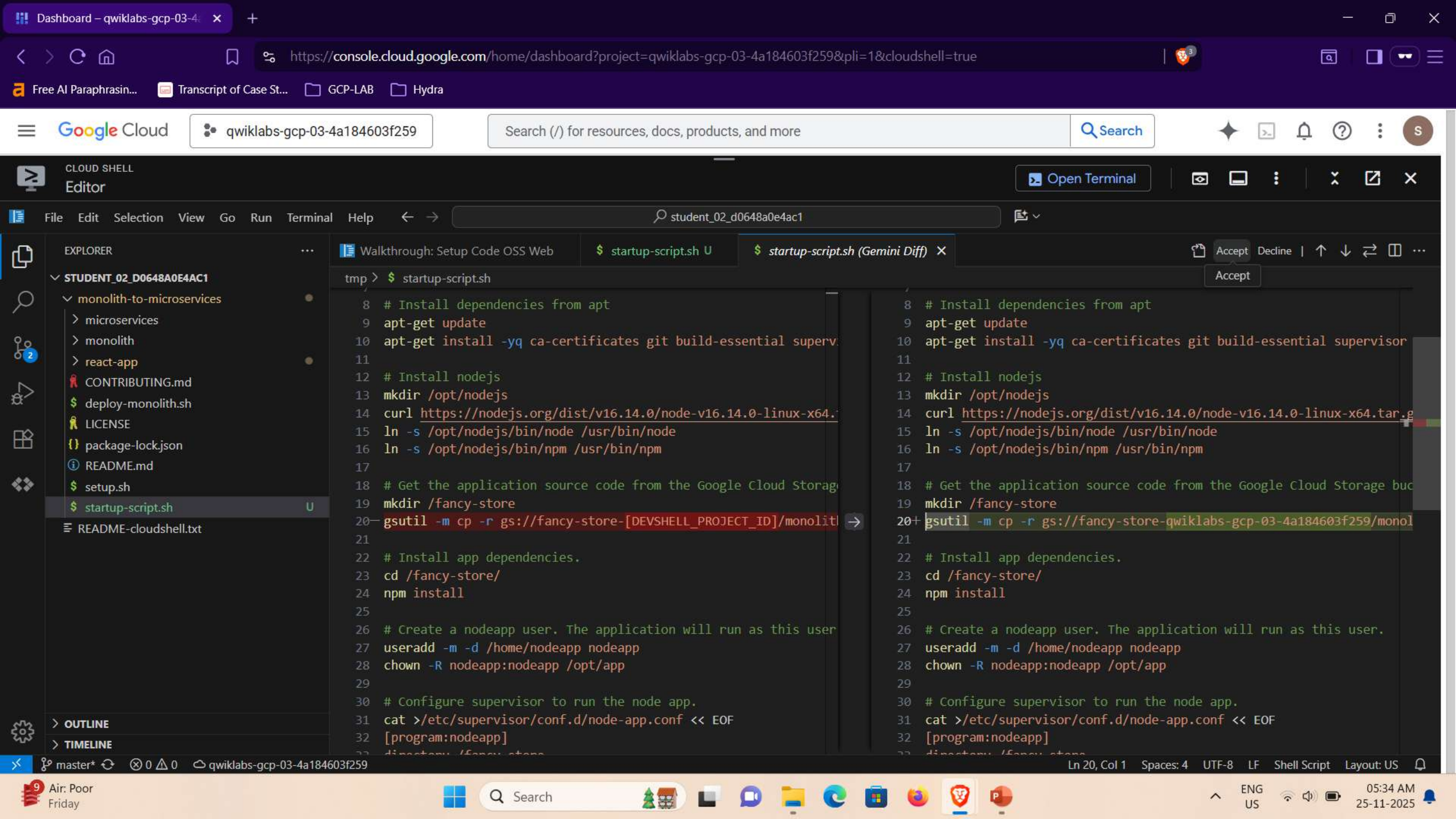
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Walkthrough: Setup Code OSS Web
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startup-script.sh (Gemini Diff)
Accept
Decline
Accept
tmp > startup-script.sh
8 # Install dependencies from apt
9 apt-get update
10 apt-get install -yq ca-certificates git build-essential supervi
11
12 # Install nodejs
13 mkdir /opt/nodejs
14 curl https://nodejs.org/dist/v16.14.0/node-v16.14.0-linux-x64.
15 ln -s /opt/nodejs/bin/node /usr/bin/node
16 ln -s /opt/nodejs/bin/npm /usr/bin/npm
17
18 # Get the application source code from the Google Cloud Storag
19 mkdir /fancy-store
20 gsutil -m cp -r gs://fancy-store-[DEVSHELL_PROJECT_ID]/monolit
21
22 # Install app dependencies.
23 cd /fancy-store/
24 npm install
25
26 # Create a nodeapp user. The application will run as this user
27 useradd -m -d /home/nodeapp nodeapp
28 chown -R nodeapp:nodeapp /opt/app
29
30 # Configure supervisor to run the node app.
31 cat >/etc/supervisor/conf.d/node-app.conf << EOF
32 [program:nodeapp]
8 # Install dependencies from apt
9 apt-get update
10 apt-get install -yq ca-certificates git build-essential supervisor
11
12 # Install nodejs
13 mkdir /opt/nodejs
14 curl https://nodejs.org/dist/v16.14.0/node-v16.14.0-linux-x64.tar.g
15 ln -s /opt/nodejs/bin/node /usr/bin/node
16 ln -s /opt/nodejs/bin/npm /usr/bin/npm
17
18 # Get the application source code from the Google Cloud Storage buc
19 mkdir /fancy-store
20+ gsutil -m cp -r gs://fancy-store-qwiklabs-gcp-03-4a184603f259/monol
21
22 # Install app dependencies.
23 cd /fancy-store/
24 npm install
25
26 # Create a nodeapp user. The application will run as this user.
27 useradd -m -d /home/nodeapp nodeapp
28 chown -R nodeapp:nodeapp /opt/app
29
30 # Configure supervisor to run the node app.
31 cat >/etc/supervisor/conf.d/node-app.conf << EOF
32 [program:nodeapp]
master*
0 0
qwiklabs-gcp-03-4a184603f259
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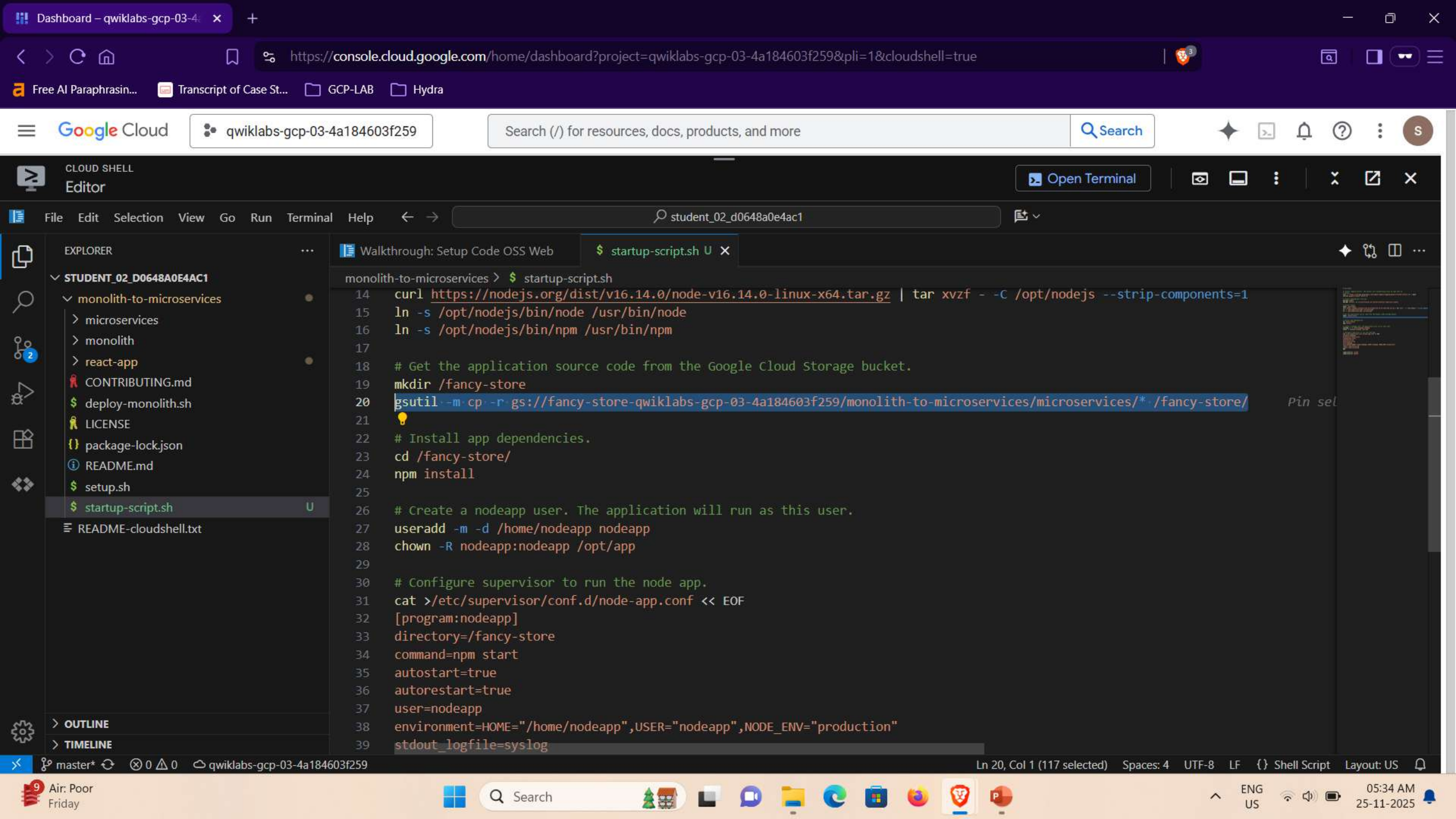
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monolith-to-microservices > startup-script.sh
14 curl https://nodejs.org/dist/v16.14.0/node-v16.14.0-linux-x64.tar.gz | tar xvzf - -C /opt/nodejs --strip-components=1
15 ln -s /opt/nodejs/bin/node /usr/bin/node
16 ln -s /opt/nodejs/bin/npm /usr/bin/npm
17
18 # Get the application source code from the Google Cloud Storage bucket.
19 mkdir /fancy-store
20 gsutil -m cp -r gs://fancy-store-qwiklabs-gcp-03-4a184603f259/monolith-to-microservices/microservices/* /fancy-store/
21
22 # Install app dependencies.
23 cd /fancy-store/
24 npm install
25
26 # Create a nodeapp user. The application will run as this user.
27 useradd -m -d /home/nodeapp nodeapp
28 chown -R nodeapp:nodeapp /opt/app
29
30 # Configure supervisor to run the node app.
31 cat >/etc/supervisor/conf.d/node-app.conf << EOF
32 [program:nodeapp]
33 directory=/fancy-store
34 command=npm start
35 autostart=true
36 autorestart=true
37 user=nodeapp
38 environment=HOME="/home/nodeapp",USER="nodeapp",NODE_ENV="production"
39 stdout_logfile=syslog
master*
0 0
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Contents

Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 01:09:14

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Use Gemini Code Assist to learn about the startup script file

To help you be more productive while minimizing context switching, Gemini Code Assist provides AI-powered smart actions directly in your code editor. For example, you can use the "Explain this" feature to let Gemini Code Assist give you more information about a particular file, block of code, or function.

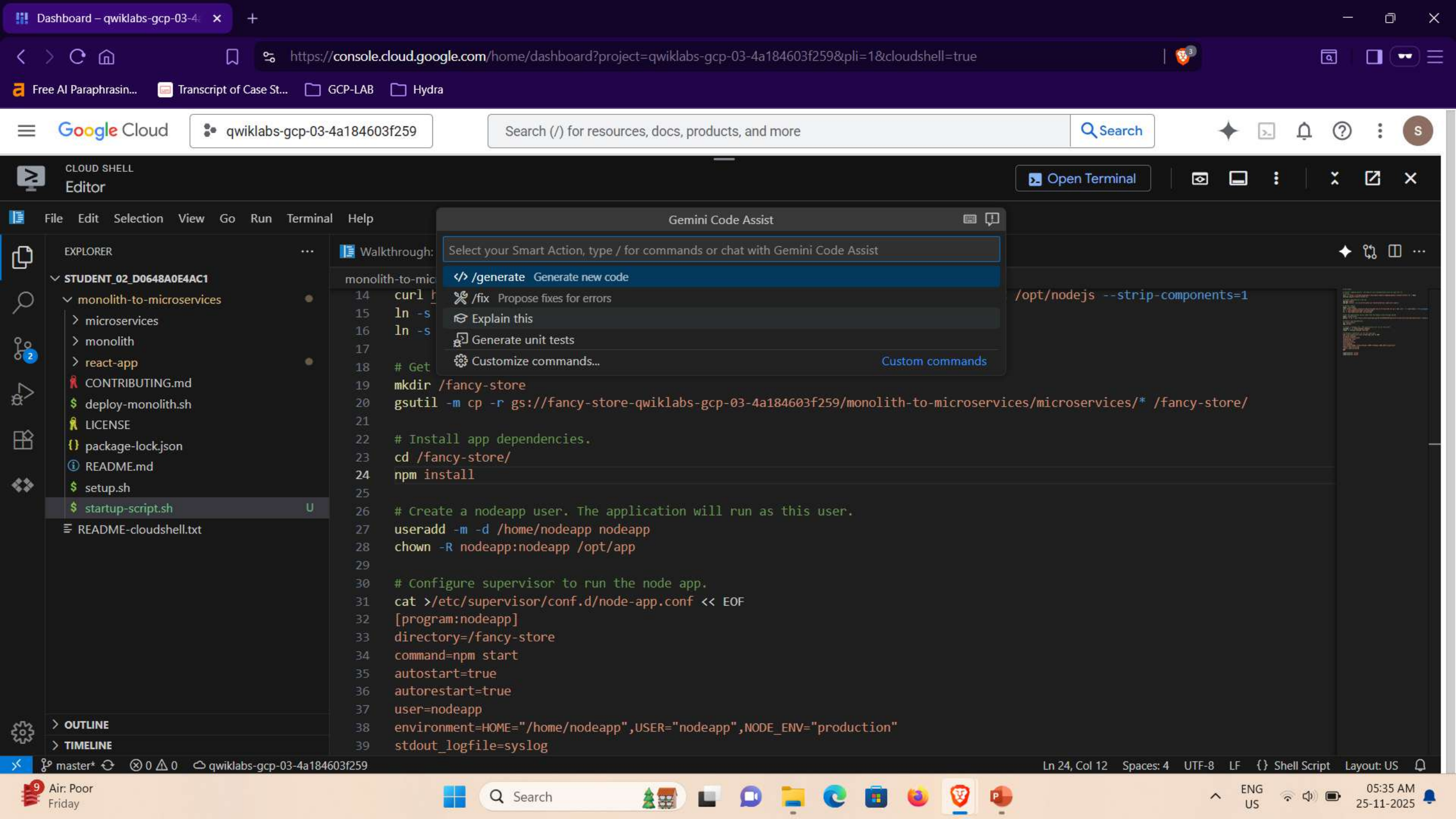
In this section, you prompt Gemini Code Assist to provide more information about a startup script for a new team member who is unfamiliar with it.

1. With the `startup-script.sh` file open, click the **Gemini Code Assist: Smart Actions** ✦ icon on the toolbar and select **Explain this**.
2. Gemini Code Assist opens a chat pane with the prefilled prompt of `Explain this`. In the inline text box of the Code Assist chat, replace the prefilled prompt with the following, and click **Send**:

```
You are an Application developer at Cymbal AI. A new team member
is unfamiliar with this startup script. Explain this "startup-
```

10/100

Lab instructions and tasks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Gemini Code Assist
Select your Smart Action, type / for commands or chat with Gemini Code Assist
/generate Generate new code
/fix Propose fixes for errors
Explain this
Generate unit tests
Customize commands...
Custom commands
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Walkthrough:
monolith-to-mic
14 curl h /opt/nodejs --strip-components=1
15 ln -s
16 ln -s
17
18 # Get
19 mkdir /fancy-store
20 gsutil -m cp -r gs://fancy-store-qwiklabs-gcp-03-4a184603f259/monolith-to-microservices/microservices/* /fancy-store/
21
22 # Install app dependencies.
23 cd /fancy-store/
24 npm install
25
26 # Create a nodeapp user. The application will run as this user.
27 useradd -m -d /home/nodeapp nodeapp
28 chown -R nodeapp:nodeapp /opt/app
29
30 # Configure supervisor to run the node app.
31 cat >/etc/supervisor/conf.d/node-app.conf << EOF
32 [program:nodeapp]
33 directory=/fancy-store
34 command=npm start
35 autostart=true
36 autorestart=true
37 user=nodeapp
38 environment=HOME="/home/nodeapp",USER="nodeapp",NODE_ENV="production"
39 stdout_logfile=syslog
master*
0 0
qwiklabs-gcp-03-4a184603f259
Ln 24, Col 12 Spaces: 4 UTF-8 LF Shell Script Layout: US
Air: Poor
Friday
Search
ENG
US
05:35 AM
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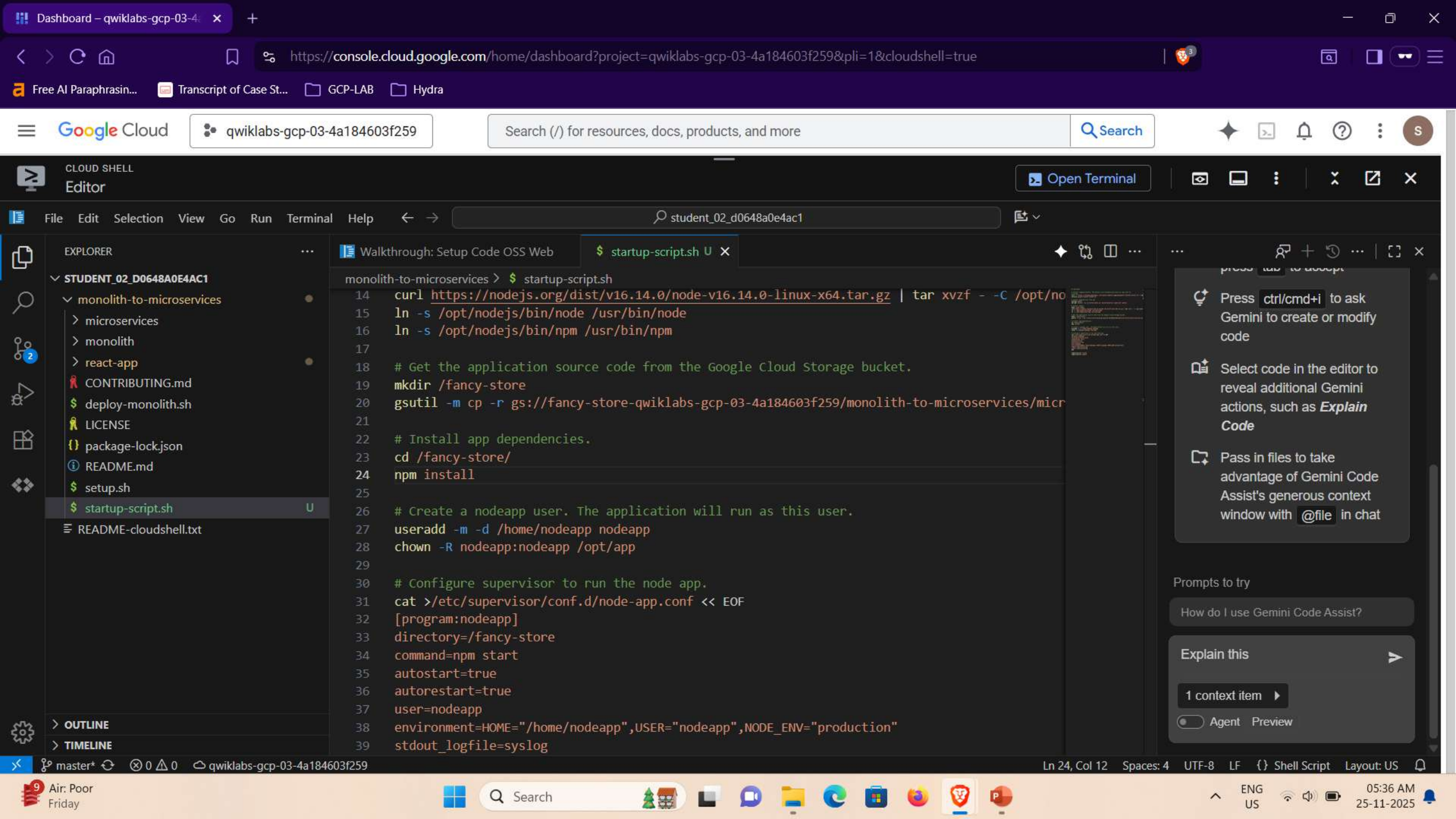
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Walkthrough: Setup Code OSS Web
startup-script.sh U
monolith-to-microservices > startup-script.sh
14 curl https://nodejs.org/dist/v16.14.0/node-v16.14.0-linux-x64.tar.gz | tar xvzf - -C /opt/no
15 ln -s /opt/nodejs/bin/node /usr/bin/node
16 ln -s /opt/nodejs/bin/npm /usr/bin/npm
17
18 # Get the application source code from the Google Cloud Storage bucket.
19 mkdir /fancy-store
20 gsutil -m cp -r gs://fancy-store-qwiklabs-gcp-03-4a184603f259/monolith-to-microservices/micr
21
22 # Install app dependencies.
23 cd /fancy-store/
24 npm install
25
26 # Create a nodeapp user. The application will run as this user.
27 useradd -m -d /home/nodeapp nodeapp
28 chown -R nodeapp:nodeapp /opt/app
29
30 # Configure supervisor to run the node app.
31 cat >/etc/supervisor/conf.d/node-app.conf << EOF
32 [program:nodeapp]
33 directory=/fancy-store
34 command=npm start
35 autostart=true
36 autorestart=true
37 user=nodeapp
38 environment=HOME="/home/nodeapp",USER="nodeapp",NODE_ENV="production"
39 stdout_logfile=syslog
Press ctrl/cmd+i to ask Gemini to create or modify code
Select code in the editor to reveal additional Gemini actions, such as Explain Code
Pass in files to take advantage of Gemini Code Assist's generous context window with @file in chat
Prompts to try
How do I use Gemini Code Assist?
Explain this
1 context item
Agent Preview
master* 0 0 qwiklabs-gcp-03-4a184603f259
Ln 24, Col 12 Spaces: 4 UTF-8 LF Shell Script Layout: US
Air: Poor
Friday
Search
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US
05:36 AM
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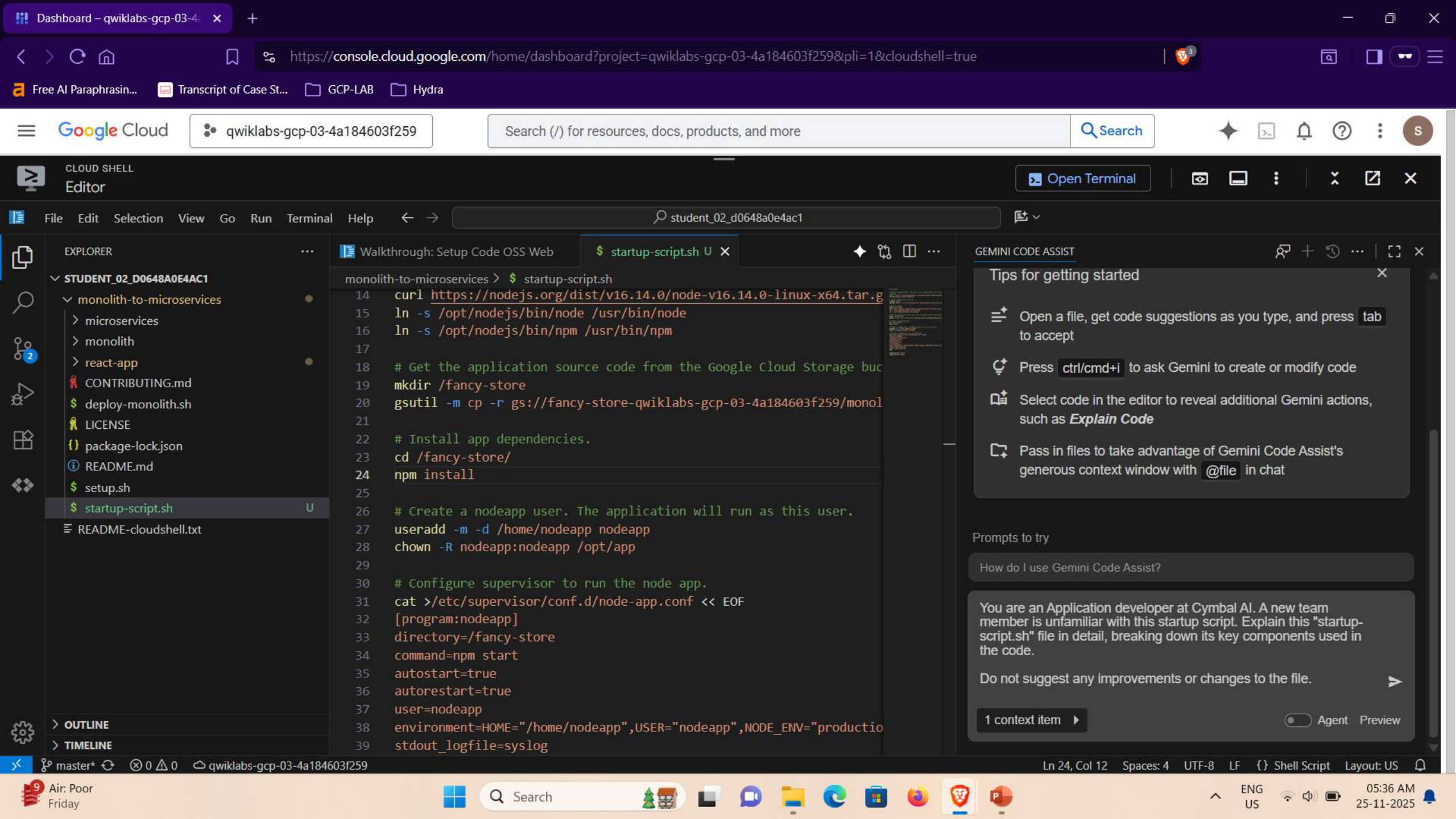
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monolith-to-microservices > startup-script.sh
14 curl https://nodejs.org/dist/v16.14.0/node-v16.14.0-linux-x64.tar.g
15 ln -s /opt/nodejs/bin/node /usr/bin/node
16 ln -s /opt/nodejs/bin/npm /usr/bin/npm
17
18 # Get the application source code from the Google Cloud Storage buc
19 mkdir /fancy-store
20 gsutil -m cp -r gs://fancy-store-qwiklabs-gcp-03-4a184603f259/monol
21
22 # Install app dependencies.
23 cd /fancy-store/
24 npm install
25
26 # Create a nodeapp user. The application will run as this user.
27 useradd -m -d /home/nodeapp nodeapp
28 chown -R nodeapp:nodeapp /opt/app
29
30 # Configure supervisor to run the node app.
31 cat >/etc/supervisor/conf.d/node-app.conf << EOF
32 [program:nodeapp]
33 directory=/fancy-store
34 command=npm start
35 autostart=true
36 autorestart=true
37 user=nodeapp
38 environment=HOME="/home/nodeapp",USER="nodeapp",NODE_ENV="productio
39 stdout_logfile=syslog
GEMINI CODE ASSIST
Tips for getting started
Open a file, get code suggestions as you type, and press tab to accept
Press ctrl/cmd+i to ask Gemini to create or modify code
Select code in the editor to reveal additional Gemini actions, such as Explain Code
Pass in files to take advantage of Gemini Code Assist's generous context window with @file in chat
Prompts to try
How do I use Gemini Code Assist?
You are an Application developer at Cymbal AI. A new team member is unfamiliar with this startup script. Explain this "startup-script.sh" file in detail, breaking down its key components used in the code.
Do not suggest any improvements or changes to the file.
1 context item
Agent
Preview
master*
0 0
qwiklabs-gcp-03-4a184603f259
Ln 24, Col 12
Spaces: 4
UTF-8
LF
Shell Script
Layout: US
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File Edit Selection View Go Run Terminal Help | student_02_d0648a0e4ac1

EXPLORER

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  - monolith
  - react-app
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  - deploy-monolith.sh
  - LICENSE
  - package-lock.json
  - README.md
  - setup.sh
  - startup-script.sh U
- README-cloudshell.txt

OUTLINE
TIMELINE

Walkthrough: Setup Code OSS Web | startup-script.sh U

monolith-to-microservices > startup-script.sh

```
14  curl https://nodejs.org/dist/v16.14.0/node-v16.14.0-linux-x64.tar.g
15  ln -s /opt/nodejs/bin/node /usr/bin/node
16  ln -s /opt/nodejs/bin/npm /usr/bin/npm
17
18  # Get the application source code from the Google Cloud Storage buc
19  mkdir /fancy-store
20  gsutil -m cp -r gs://fancy-store-qwiklabs-gcp-03-4a184603f259/monol
21
22  # Install app dependencies.
23  cd /fancy-store/
24  npm install
25
26  # Create a nodeapp user. The application will run as this user.
27  useradd -m -d /home/nodeapp nodeapp
28  chown -R nodeapp:nodeapp /opt/app
29
30  # Configure supervisor to run the node app.
31  cat >/etc/supervisor/conf.d/node-app.conf << EOF
32  [program:nodeapp]
33  directory=/fancy-store
34  command=npm start
35  autostart=true
36  autorestart=true
37  user=nodeapp
38  environment=HOME="/home/nodeapp",USER="nodeapp",NODE_ENV="productio
39  stdout_logfile=syslog
```

GEMINI CODE ASSIST

its key components used in the code.

Do not suggest any improvements or changes to the file.

Gemini

Thinking

Of course! I can certainly explain this startup script for your new team member. This script is designed to run automatically when a new virtual machine instance starts up, preparing it to run a Node.js application.

Here is a detailed breakdown of the `startup-script.sh` file:

Script Analysis: `/home/student_02_d0648a0e4ac1/monolith-to-microservices/startup-script.sh`

Prompts to try

What is Supervisor and why is it used in this script?

Explain the security implications of running the application as a non-root user.

Ask Gemini or type '@'

1 context item | Agent | Preview

master* | 0 0 | qwiklabs-gcp-03-4a184603f259 | Ln 24, Col 12 | Spaces: 4 | UTF-8 | LF | Shell Script | Layout: US

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```
Do not suggest any improvements or changes to the file.
```

The explanation for the code in the `startup-script.sh` file appears in the **Gemini Code Assist** chat.

3. Close the `startup-script.sh` file.

Return to the Cloud Shell Terminal and run the following to copy the `startup-script.sh` file into your bucket:

```
gsutil cp ~/monolith-to-microservices/startup-script.sh
gs://fancy-store-qwiklabs-gcp-03-4a184603f259
```

It is now accessible at:
`https://storage.googleapis.com/[BUCKET_NAME]/startup-script.sh`.

[BUCKET_NAME] represents the name of the Cloud Storage bucket. This is only viewable by authorized users and service accounts by default, and it is inaccessible in a web browser. Compute Engine instances are automatically able to access this through their service account.

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
Installing latest LTS version.
v24.11.1 is already installed.
Now using node v24.11.1 (npm v11.6.2)
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices (qwiklabs-gcp-03-4a184603f259)$ cd microservices
npm start

> microservices@1.0.0 start
> concurrently "npm run frontend" "npm run products" "npm run orders"

[0]
[0] > microservices@1.0.0 frontend
[0] > node ./src/frontend/server.js
[0]
[2]
[2] > microservices@1.0.0 orders
[2] > node ./src/orders/server.js
[2]
[1]
[1] > microservices@1.0.0 products
[1] > node ./src/products/server.js
[1]
[2] Orders microservice listening on port 8081!
[0] Frontend microservice listening on port 8080!
[1] Products microservice listening on port 8082!
^C[2] npm run orders exited with code SIGINT
[0] npm run frontend exited with code SIGINT
[1] npm run products exited with code SIGINT
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$ gcloud services enable cloudaicompanion.googleapis.com
Operation "operations/acat.p2-583921627352-d05198bd-4d57-4645-91da-7407e08f0d33" finished successfully.
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$ touch ~/monolith-to-microservices/startup-script.sh
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$ gsutil cp ~/monolith-to-microservices/startup-script.sh gs://fancy-store-qwiklabs-gcp-03-4a184603f259
Copying file:///home/student_02_d0648a0e4ac1/monolith-to-microservices/startup-script.sh [Content-Type=text/x-sh]...
/ [1 files][  1.3 KiB/  1.3 KiB]
Operation completed over 1 objects/1.3 KiB.
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$
```

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Lab setup instructions and requirements

End Lab 01:05:01

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Copy code into the Cloud Storage bucket

When instances launch, they pull code from the Cloud Storage bucket, so you can store some configuration variables within the `.env` file of the code.

Note: You could also code this to pull environment variables from elsewhere. However, for demonstration purposes, this is a simple method to handle the configuration. In production, environment variables would likely be stored outside of the code.

- Run the following to copy the cloned code into your bucket:

```
cd ~
rm -rf monolith-to-microservices/*/node_modules
gsutil -m cp -r monolith-to-microservices gs://fancy-store-qwiklabs-gcp-03-4a184603f259/
```

Dashboard – qwiklabs-gcp-03-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$ gsutil cp ~/monolith-to-microservices/startup-script.sh gs://fancy-store-qwiklabs-gcp-03-4a184603f259
Copying file:///home/student_02_d0648a0e4ac1/monolith-to-microservices/startup-script.sh [Content-Type=text/x-sh]...
/ [1 files][  1.3 KiB/  1.3 KiB]
Operation completed over 1 objects/1.3 KiB.
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/microservices (qwiklabs-gcp-03-4a184603f259)$ cd ~
rm -rf monolith-to-microservices/*/node_modules
gsutil -m cp -r monolith-to-microservices gs://fancy-store-qwiklabs-gcp-03-4a184603f259/
Copying file://monolith-to-microservices/setup.sh [Content-Type=text/x-sh]...
Copying file://monolith-to-microservices/deploy-monolith.sh [Content-Type=text/x-sh]...
Copying file://monolith-to-microservices/CONTRIBUTING.md [Content-Type=text/markdown]...
Copying file://monolith-to-microservices/startup-script.sh [Content-Type=text/x-sh]...
Copying file://monolith-to-microservices/README.md [Content-Type=text/markdown]...
Copying file://monolith-to-microservices/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/LICENSE [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/package.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/.gcloudignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/Dockerfile [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/.dockerignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/data/orders.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/data/products.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/k8s/service.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/monolith/k8s/deployment.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/monolith/public/index.html [Content-Type=text/html]...
Copying file://monolith-to-microservices/monolith/public/asset-manifest.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/public/manifest.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/public/robots.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/record-player.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/film-camera.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/air-plant.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/credits.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/barista-kit.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/typewriter.jpg [Content-Type=image/jpeg]...
```

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Dashboard – qwiklabs-gcp-03-4

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

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```
Copying file://monolith-to-microservices/monolith/public/static/img/products/camera-lens.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/camp-mug.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/city-bike.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/js/main.4345c22d.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/monolith/public/static/js/main.4345c22d.js.map [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/public/static/js/main.4345c22d.js.LICENSE.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/monolith/src/server.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/microservices/package.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/products/package.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/products/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/products/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/products/Dockerfile [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/products/server.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/microservices/src/products/.dockerignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/products/data/products.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/products/k8s/service.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/microservices/src/products/k8s/deployment.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/microservices/src/orders/package.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/orders/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/orders/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/orders/Dockerfile [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/orders/server.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/microservices/src/orders/.dockerignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/orders/data/orders.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/orders/k8s/service.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/microservices/src/orders/k8s/deployment.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/microservices/src/frontend/package.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/frontend/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/frontend/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/frontend/.gcloudignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/frontend/Dockerfile [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/frontend/server.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/microservices/src/frontend/.dockerignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/microservices/src/frontend/k8s/service.yml [Content-Type=application/yaml]...
```

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Dashboard – qwiklabs-gcp-03-4a

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

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```
Copying file://monolith-to-microservices/microservices/src/frontend/k8s/deployment.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/index.html [Content-Type=text/html]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/asset-manifest.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/manifest.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/robots.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/record-player.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/film-camera.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/air-plant.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/credits.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/barista-kit.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/typewriter.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/terrarium.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/camp-mug.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/camera-lens.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/img/products/city-bike.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/js/main.e4fbf856.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/js/main.e4fbf856.js.LICENSE.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/microservices/src/frontend/public/static/js/main.e4fbf856.js.map [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/react-app/package.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/react-app/.env [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/react-app/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/react-app/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/react-app/README.md [Content-Type=text/markdown]...
Copying file://monolith-to-microservices/react-app/.env.monolith [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/react-app/build/index.html [Content-Type=text/html]...
Copying file://monolith-to-microservices/react-app/build/manifest.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/react-app/build/asset-manifest.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/react-app/build/robots.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/react-app/build/static/img/products/record-player.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/react-app/build/static/img/products/film-camera.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/react-app/build/static/img/products/air-plant.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/react-app/build/static/img/products/credits.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/react-app/build/static/img/products/barista-kit.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/react-app/build/static/img/products/typewriter.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/react-app/build/static/img/products/terrarium.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/react-app/build/static/img/products/camp-mug.jpg [Content-Type=image/jpeg]...
```

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Dashboard – qwiklabs-gcp-03-4

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

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```
Copying file://monolith-to-microservices/react-app/src/pages/NotFound/index.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/react-app/src/pages/Home/index.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/react-app/src/pages/Home/index.js.new [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/react-app/src/pages/Products/index.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/react-app/scripts/post-build.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/.git/description [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/packed-refs [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/config [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/HEAD [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/index [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/logs/HEAD [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/logs/refs/heads/master [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/logs/refs/remotes/origin/HEAD [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.rev [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.pack [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.idx [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/refs/heads/master [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/info/exclude [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/refs/remotes/origin/HEAD [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/update.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-merge-commit.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-applypatch.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-push.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-commit.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/sendemail-validate.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/prepare-commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/push-to-checkout.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/applypatch-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/post-update.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/fsmonitor-watchman.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-rebase.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-receive.sample [Content-Type=application/octet-stream]...
/ [157/157 files][ 13.0 MiB/ 13.0 MiB] 100% Done  37.8 KiB/s ETA 00:00:00
Operation completed over 157 objects/13.0 MiB.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

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Lab setup instructions and requirements

End Lab 01:03:14

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Deploy the backend instance

The first instance to be deployed is the backend instance, which houses the Orders and Products microservices.

Note: In a production environment, you may want to separate each microservice into its own instance and instance group to allow it to scale independently. For demonstration purposes, both backend microservices (Orders & Products) reside on the same instance and instance group.

- Execute the following command to create an `e2-standard-2` instance that is configured to use the startup script. It is tagged as a `backend` instance so you can apply specific firewall rules to it later:

```
gcloud compute instances create backend \
    --zone=us-central1-c \
    --machine-type=e2-standard-2 \
    --tags=backend \
   --metadata=startup-script-
```

Dashboard – qwiklabs-gcp-03-4a

qwiklabs-gcp-03-4a1... – Google Clou

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

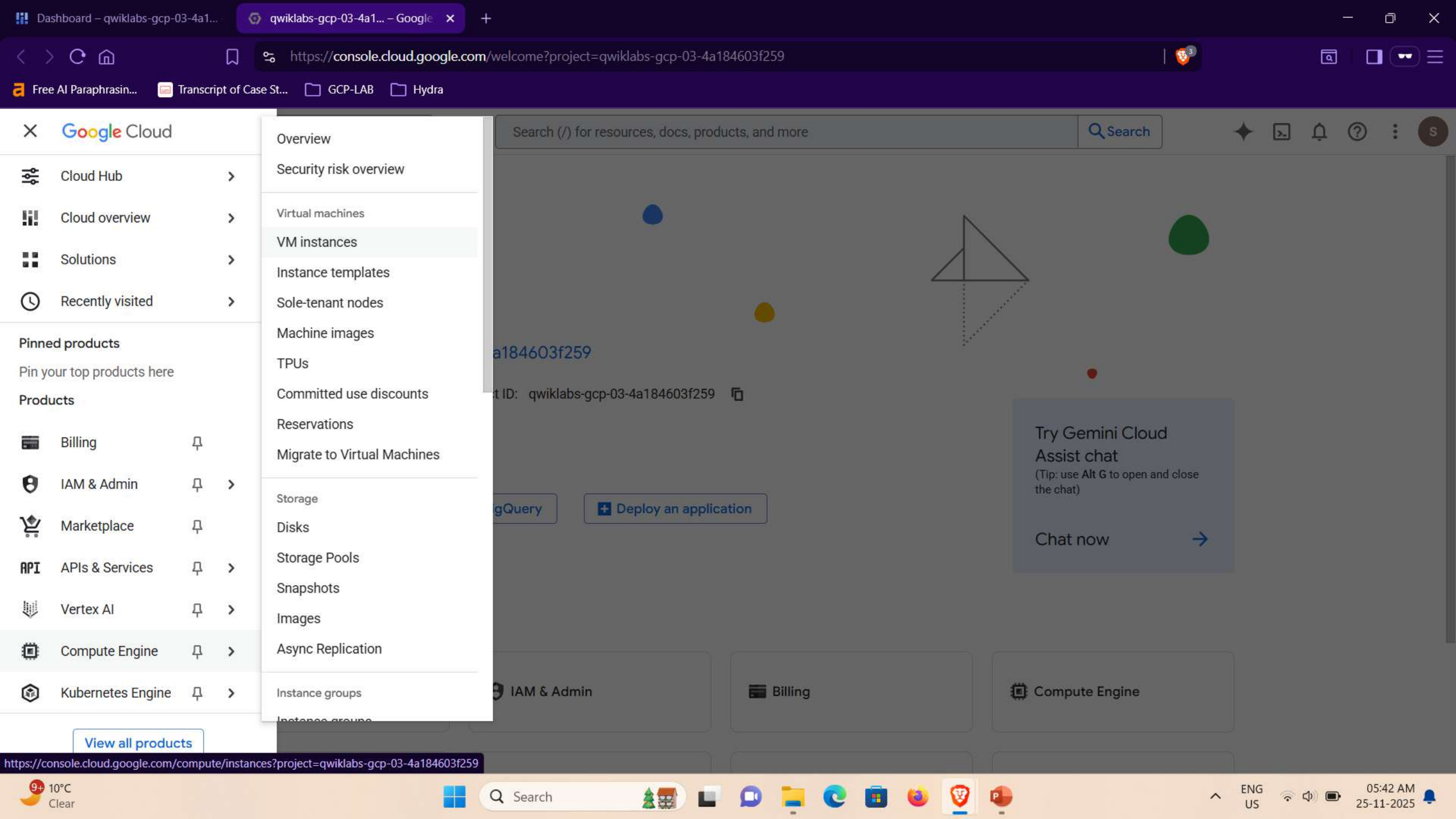
CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.rev [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.pack [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.idx [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/refs/heads/master [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/info/exclude [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/refs/remotes/origin/HEAD [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/update.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-merge-commit.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-applypatch.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-push.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-commit.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/sendemail-validate.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/prepare-commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/push-to-checkout.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/applypatch-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/post-update.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/fsmonitor-watchman.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-rebase.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-receive.sample [Content-Type=application/octet-stream]...
/ [157/157 files][ 13.0 MiB/ 13.0 MiB] 100% Done  37.8 KiB/s ETA 00:00:00
Operation completed over 157 objects/13.0 MiB.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances create backend \
    --zone=us-central1-c \
    --machine-type=e2-standard-2 \
    --tags=backend \
   --metadata=startup-script-url=https://storage.googleapis.com/fancy-store-qwiklabs-gcp-03-4a184603f259/startup-script.sh
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
NAME: backend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.133.249.248
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

Microsoft Edge

10°C Clear | Search | ENG US | 05:42 AM 25-11-2025


Dashboard – qwiklabs-gcp-03-4a1...
qwiklabs-gcp-03-4a1... – Google
https://console.cloud.google.com/welcome?project=qwiklabs-gcp-03-4a184603f259
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Hydra
Google Cloud
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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
Overview
Security risk overview
Virtual machines
VM instances
Instance templates
Sole-tenant nodes
Machine images
TPUs
Committed use discounts
Reservations
Migrate to Virtual Machines
Storage
Disks
Storage Pools
Snapshots
Images
Async Replication
Instance groups
a184603f259
t ID: qwiklabs-gcp-03-4a184603f259
gQuery
Deploy an application
Try Gemini Cloud Assist chat
(Tip: use Alt G to open and close the chat)
Chat now
IAM & Admin
Billing
Compute Engine
https://console.cloud.google.com/compute/instances?project=qwiklabs-gcp-03-4a184603f259
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25-11-2025

Dashboard – qwiklabs-gcp-03-4a1... | VM instances – Compute Engine

https://console.cloud.google.com/compute/instances?project=qwiklabs-gcp-03-4a184603f259

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

Compute Engine

- Overview
- Security risk overview

Virtual machines

- VM instances
- Instance templates
- Sole-tenant nodes
- Machine images
- TPUs
- Committed use discou...
- Reservations
- Migrate to Virtual Mach...

Storage

- Disks

- Marketplace
- Release Notes

VM instances

Create instance | Import VM | Refresh | Learn

Instances | Observability | Instance schedules

VM instances

Filter: Enter property name or value

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
✓	backend	us-central1-c			10.128.0.2 (nic0)	34.133.249.248 (nic0)	SSH

Related actions

Show

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Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
Copying file://monolith-to-microservices/.git/hooks/pre-applypatch.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-push.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-commit.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/sendemail-validate.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/prepare-commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/push-to-checkout.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/applypatch-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/post-update.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/fsmonitor-watchman.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-rebase.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-receive.sample [Content-Type=application/octet-stream]...
/ [157/157 files][ 13.0 MiB/ 13.0 MiB] 100% Done  37.8 KiB/s ETA 00:00:00
Operation completed over 157 objects/13.0 MiB.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances create backend \
    --zone=us-central1-c \
    --machine-type=e2-standard-2 \
    --tags=backend \
   --metadata=startup-script-url=https://storage.googleapis.com/fancy-store-qwiklabs-gcp-03-4a184603f259/startup-script.sh
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
NAME: backend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.133.249.248
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances list
NAME: backend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.133.249.248
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

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Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
Copying file://monolith-to-microservices/.git/hooks/pre-applypatch.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-push.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-commit.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/sendemail-validate.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/prepare-commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/push-to-checkout.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/applypatch-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/post-update.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/fsmonitor-watchman.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-rebase.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-receive.sample [Content-Type=application/octet-stream]...
/ [157/157 files][ 13.0 MiB/ 13.0 MiB] 100% Done  37.8 KiB/s ETA 00:00:00
Operation completed over 157 objects/13.0 MiB.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances create backend \
    --zone=us-central1-c \
    --machine-type=e2-standard-2 \
    --tags=backend \
   --metadata=startup-script-url=https://storage.googleapis.com/fancy-store-qwiklabs-gcp-03-4a184603f259/startup-script.sh
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
NAME: backend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.133.249.248
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances list
NAME: backend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.133.249.248
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

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Lab setup instructions and requirements

End Lab 00:57:00

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.142.0.2
EXTERNAL_IP: 35.237.245.193
STATUS: RUNNING
```

2. **Copy the External IP** for the backend.

3. In the Cloud Shell Explorer, navigate to `monolith-to-microservices` > `react-app`.

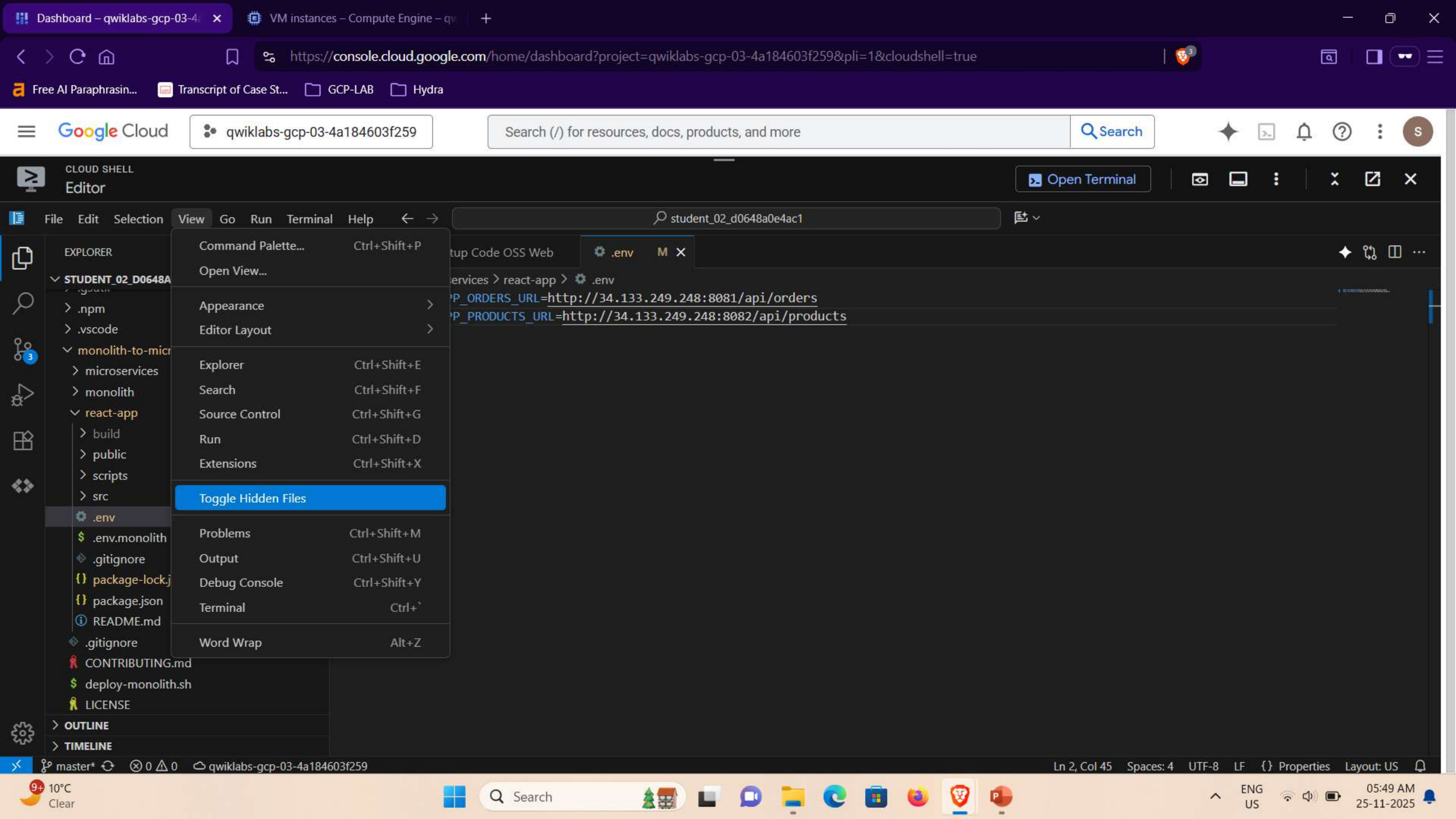
4. In the Code Editor, select **View** > **Toggle Hidden Files** in order to see the `.env` file.

In the next step, you edit the `.env` file to point to the External IP of the backend. **[BACKEND_ADDRESS]** represents the External IP address of the backend instance determined from the recently executed `gcloud` command.

5. In the `.env` file, replace `localhost` with your `[BACKEND_ADDRESS]`:

```
REACT_APP_ORDERS_URL=http://[BACKEND_ADDRESS]:8081/api/orders
REACT_APP_PRODUCTS_URL=http://[BACKEND_ADDRESS]:8082/api/products
```

20/100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VM instances – Compute Engine – qv
https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true
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File Edit Selection View Go Run Terminal Help
student_02_d0648a0e4ac1
EXPLORER
STUDENT_02_D0648A
.npm
.vscode
monolith-to-micr
microservices
monolith
react-app
build
public
scripts
src
.env
.env.monolith
.gitignore
package-lock.j
package.json
README.md
.gitignore
CONTRIBUTING.md
deploy-monolith.sh
LICENSE
OUTLINE
TIMELINE
Command Palette... Ctrl+Shift+P
Open View...
Appearance
Editor Layout
Explorer Ctrl+Shift+E
Search Ctrl+Shift+F
Source Control Ctrl+Shift+G
Run Ctrl+Shift+D
Extensions Ctrl+Shift+X
Toggle Hidden Files
Problems Ctrl+Shift+M
Output Ctrl+Shift+U
Debug Console Ctrl+Shift+Y
Terminal Ctrl+`
Word Wrap Alt+Z
tup Code OSS Web
.env M
ervices > react-app > .env
P_ORDERS_URL=http://34.133.249.248:8081/api/orders
P_PRODUCTS_URL=http://34.133.249.248:8082/api/products
master*
0 0
qwiklabs-gcp-03-4a184603f259
Ln 2, Col 45 Spaces: 4 UTF-8 LF {} Properties Layout: US
10°C
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US
05:49 AM
25-11-2025

Lab setup instructions and requirements

End Lab 00:53:36

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

4. In the Code Editor, select **View** > **Toggle Hidden Files** in order to see the `.env` file.

In the next step, you edit the `.env` file to point to the External IP of the backend. **[BACKEND_ADDRESS]** represents the External IP address of the backend instance determined from the recently executed `gcloud` command.

5. In the `.env` file, replace `localhost` with your `[BACKEND_ADDRESS]`:

```
REACT_APP_ORDERS_URL=http://[BACKEND_ADDRESS]:8081/api/orders
REACT_APP_PRODUCTS_URL=http://[BACKEND_ADDRESS]:8082/api/products
```

6. **Save** the file.

7. In Cloud Shell, run the following to rebuild `react-app`, which updates the frontend code:

```
cd ~/monolith-to-microservices/react-app
npm install && npm run-script build
```

20/100

Lab setup instructions and requirements

End Lab 00:53:29

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

7. In Cloud Shell, run the following to rebuild `react-app`, which updates the frontend code:

```
cd ~/monolith-to-microservices/react-app
npm install && npm run-script build
```

8. Then run the following to copy the application code into the Cloud Storage bucket:

```
cd ~
rm -rf monolith-to-microservices/*/node_modules
gsutil -m cp -r monolith-to-microservices gs://fancy-store-qwiklabs-gcp-03-4a184603f259/
```

Deploy the frontend instance

Now that the code is configured, you are ready to deploy the frontend instance.

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ ^C
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ ^C
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ cd ~/monolith-to-microservices/react-app
npm install && npm run-script build
npm warn deprecated source-map-url@0.4.1: See https://github.com/lydell/source-map-url#deprecated
npm warn deprecated svgo@1.3.2: This SVGO version is no longer supported. Upgrade to v2.x.x.

added 1480 packages, and audited 1481 packages in 36s

205 packages are looking for funding
  run `npm fund` for details

34 vulnerabilities (4 low, 10 moderate, 18 high, 2 critical)

To address issues that do not require attention, run:
  npm audit fix

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.

> frontend@0.1.0 prebuild
> npm run build:monolith


> frontend@0.1.0 build:monolith
> env-cmd -f .env.monolith react-scripts build

(node:9714) [DEP0176] DeprecationWarning: fs.F_OK is deprecated, use fs.constants.F_OK instead
(Use `node --trace-deprecation ...` to show where the warning was created)
Creating an optimized production build...
Browserslist: caniuse-lite is outdated. Please run:
  npx update-browserslist-db@latest
  Why you should do it regularly: https://github.com/browserslist/update-db#readme
Compiled successfully.

File sizes after gzip:
```

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Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
> frontend@0.1.0 build
> react-scripts build

(node:9755) [DEP0176] DeprecationWarning: fs.F_OK is deprecated, use fs.constants.F_OK instead
(Use `node --trace-deprecation ...` to show where the warning was created)
Creating an optimized production build...
Browserslist: caniuse-lite is outdated. Please run:
  npx update-browserslist-db@latest
  Why you should do it regularly: https://github.com/browserslist/update-db#readme
Compiled successfully.

File sizes after gzip:

  88.23 kB (+29 B)  build/static/js/main.9a6ff735.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  npm install -g serve
  serve -s build

Find out more about deployment here:

  https://cra.link/deployment


> frontend@0.1.0 postbuild
> node scripts/post-build.js ./build ../microservices/src/frontend/public

Deleting stale folder: ../microservices/src/frontend/public
Deleted stale destination folder: ../microservices/src/frontend/public
Copying files from ./build to ../microservices/src/frontend/public
Copied ./build to ../microservices/src/frontend/public successfully!
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/react-app (qwiklabs-gcp-03-4a184603f259)$
```

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Lab setup instructions and requirements

End Lab 00:51:42

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

7. In Cloud Shell, run the following to rebuild `react-app`, which updates the frontend code:

```
cd ~/monolith-to-microservices/react-app
npm install && npm run-script build
```

8. Then run the following to copy the application code into the Cloud Storage bucket:

Copied!

```
cd ~
rm -rf monolith-to-microservices/*/node_modules
gsutil -m cp -r monolith-to-microservices gs://fancy-store-qwiklabs-gcp-03-4a184603f259/
```

Deploy the frontend instance

Now that the code is configured, you are ready to deploy the frontend instance.

20/100

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/react-app (qwiklabs-gcp-03-4a184603f259)$ cd ~
rm -rf monolith-to-microservices/*/node_modules
gsutil -m cp -r monolith-to-microservices gs://fancy-store-qwiklabs-gcp-03-4a184603f259/
Copying file://monolith-to-microservices/setup.sh [Content-Type=text/x-sh]...
Copying file://monolith-to-microservices/deploy-monolith.sh [Content-Type=text/x-sh]...
Copying file://monolith-to-microservices/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/CONTRIBUTING.md [Content-Type=text/markdown]...
Copying file://monolith-to-microservices/README.md [Content-Type=text/markdown]...
Copying file://monolith-to-microservices/monolith/package.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/startup-script.sh [Content-Type=text/x-sh]...
Copying file://monolith-to-microservices/LICENSE [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/.gitignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/package-lock.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/.gcloudignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/Dockerfile [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/.dockerignore [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/data/orders.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/data/products.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/k8s/service.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/monolith/k8s/deployment.yml [Content-Type=application/yaml]...
Copying file://monolith-to-microservices/monolith/public/index.html [Content-Type=text/html]...
Copying file://monolith-to-microservices/monolith/public/asset-manifest.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/public/manifest.json [Content-Type=application/json]...
Copying file://monolith-to-microservices/monolith/public/robots.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/record-player.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/film-camera.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/air-plant.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/credits.txt [Content-Type=text/plain]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/barista-kit.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/typewriter.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/terrarium.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/camp-mug.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/camera-lens.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/img/products/city-bike.jpg [Content-Type=image/jpeg]...
Copying file://monolith-to-microservices/monolith/public/static/js/main.4345c22d.js [Content-Type=text/javascript]...
Copying file://monolith-to-microservices/monolith/public/static/js/main.4345c22d.js.map [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/monolith/src/server.js [Content-Type=text/javascript]...
```

9+ 10°C Clear | Search | ENG US | 05:53 AM 25-11-2025

Lab setup instructions and requirements

End Lab 00:49:34

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

qwiklabs-gcp-03-4a184603f259/

Deploy the frontend instance

Now that the code is configured, you are ready to deploy the frontend instance.

- Execute the following to deploy the `frontend` instance with a similar command as before. This instance is tagged as `frontend` for firewall purposes:

```
gcloud compute instances create frontend \
    --zone=us-central1-c \
    --machine-type=e2-standard-2 \
    --tags=frontend \
    --metadata=startup-script-
url=https://storage.googleapis.com/fancy-store-qwiklabs-gcp-03-
4a184603f259/startup-script.sh
```

20/100

Dashboard – qwiklabs-gcp-03-4a | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
Copying file://monolith-to-microservices/.git/logs/refs/heads/master [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/logs/refs/remotes/origin/HEAD [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.pack [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.idx [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/refs/heads/master [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/objects/pack/pack-50cd7fd9edc9891dd6ad4034cb4ade6fd87ec054.rev [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/refs/remotes/origin/HEAD [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/info/exclude [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/update.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-merge-commit.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-applypatch.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-push.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-commit.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/sendemail-validate.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/prepare-commit-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/push-to-checkout.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/post-update.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/applypatch-msg.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/fsmonitor-watchman.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-rebase.sample [Content-Type=application/octet-stream]...
Copying file://monolith-to-microservices/.git/hooks/pre-receive.sample [Content-Type=application/octet-stream]...
| [157/157 files][ 13.0 MiB/ 13.0 MiB] 100% Done 701.5 KiB/s ETA 00:00:00
Operation completed over 157 objects/13.0 MiB.
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances create frontend \
    --zone=us-central1-c \
    --machine-type=e2-standard-2 \
    --tags=frontend \
    --metadata=startup-script-url=https://storage.googleapis.com/fancy-store-qwiklabs-gcp-03-4a184603f259/startup-script.sh
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/frontend].
NAME: frontend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.41.251.11
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

10°C Clear | Search | ENG US | 05:55 AM 25-11-2025

and backend in this sample. In a production environment, you'd only run the microservices you need on each component.

Lab setup instructions and requirements

End Lab 00:48:15

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Configure the network

1. Run the following to create firewall rules to allow access to port 8080 for the frontend, and ports 8081-8082 for the backend. These firewall commands use the tags assigned during instance creation for application:

```
gcloud compute firewall-rules create fw-fe \
    --allow tcp:8080 \
    --target-tags=frontend
```

```
gcloud compute firewall-rules create fw-be \
    --allow tcp:8081-8082 \
    --target-tags=backend
```

The website should now be fully functional.

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances create frontend \
    --zone=us-central1-c \
    --machine-type=e2-standard-2 \
    --tags=frontend \
    --metadata=startup-script-url=https://storage.googleapis.com/fancy-store-qwiklabs-gcp-03-4a184603f259/startup-script.sh
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/frontend].
NAME: frontend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.41.251.11
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute firewall-rules create fw-fe \
    --allow tcp:8080 \
    --target-tags=frontend
Creating firewall...working..Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/firewalls/fw-fe].
Creating firewall...done.
NAME: fw-fe
NETWORK: default
DIRECTION: INGRESS
PRIORITY: 1000
ALLOW: tcp:8080
DENY:
DISABLED: False
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute firewall-rules create fw-be \
    --allow tcp:8081-8082 \
    --target-tags=backend
Creating firewall...working..Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/firewalls/fw-be].
Creating firewall...done.
NAME: fw-be
NETWORK: default
DIRECTION: INGRESS
PRIORITY: 1000
ALLOW: tcp:8081-8082
DENY:
DISABLED: False
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

10°C Clear | Search | ENG US | 05:57 AM 25-11-2025

Contents

Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 00:41:02

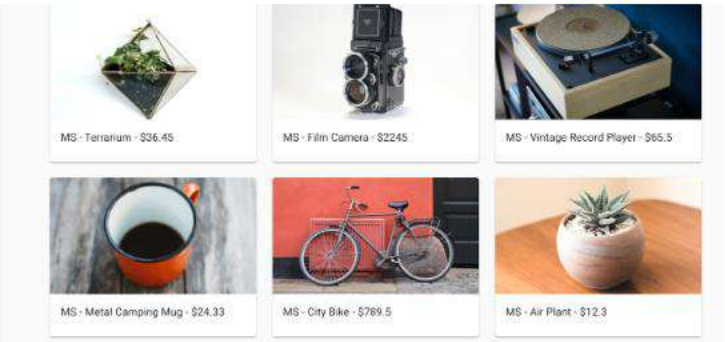
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Open Google Cloud console

Username
student-02-d0648a0e4ac1

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460



Click **Check my progress** to verify the objective.

Deploy instances and configure the network

Check my progress

Assessment completed!

Task 5. Create managed instance groups

40/100

Lab setup instructions and requirements

End Lab 00:41:12

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Task 5. Create managed instance groups

To allow the application to scale, managed instance groups are created and use the `frontend` and `backend` instances as Instance Templates.

A managed instance group (MIG) contains identical instances that you can manage as a single entity in a single zone. Managed instance groups maintain high availability of your apps by proactively keeping your instances available, that is, in the RUNNING state. You intend using managed instance groups for your frontend and backend instances to provide autohealing, load balancing, autoscaling, and rolling updates.

Create an instance template from a source instance

Before you can create a managed instance group, you have to first create an instance template to be the foundation for the group. Instance templates allow you to define the machine type, boot disk image or container image, network, and other instance properties to use when creating new VM instances. You can use instance templates to create instances in a managed instance group or even to create individual instances.

Contents

Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 00:36:30

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

1. First, run the following to stop both instances:

```
gcloud compute instances stop frontend --zone=us-central1-c
```

```
gcloud compute instances stop backend --zone=us-central1-c
```

2. Then, create the instance template from each of the source instances with the following commands:

```
gcloud compute instance-templates create fancy-fe \
    --source-instance-zone=us-central1-c \
    --source-instance=frontend
```

```
gcloud compute instance-templates create fancy-be \
    --source-instance-zone=us-central1-c \
    --source-instance=backend
```

40/100

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
DENY:
DISABLED: False
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute firewall-rules create fw-be \
    --allow tcp:8081-8082 \
    --target-tags=backend
Creating firewall...working..Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/firewalls/fw-be].
Creating firewall...done.
NAME: fw-be
NETWORK: default
DIRECTION: INGRESS
PRIORITY: 1000
ALLOW: tcp:8081-8082
DENY:
DISABLED: False
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances list
NAME: backend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.133.249.248
STATUS: RUNNING

NAME: frontend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.41.251.11
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ ^C
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances stop frontend --zone=us-central1-c
Stopping instance(s) frontend...done.
Updated [https://compute.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/frontend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances stop backend --zone=us-central1-c
Stopping instance(s) backend...done.
Updated [https://compute.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

Air: Very poor
Now

Search

ENG
US

06:06 AM
25-11-2025

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.133.249.248
STATUS: RUNNING

NAME: frontend
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.41.251.11
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ ^C
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances stop frontend --zone=us-central1-c
Stopping instance(s) frontend...done.
Updated [https://compute.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/frontend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances stop backend --zone=us-central1-c
Stopping instance(s) backend...done.
Updated [https://compute.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-templates create fancy-fe \
    --source-instance-zone=us-central1-c \
    --source-instance=frontend
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/instanceTemplates/fancy-fe].
NAME: fancy-fe
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:12.273-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-templates create fancy-be \
    --source-instance-zone=us-central1-c \
    --source-instance=backend
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/instanceTemplates/fancy-be].
NAME: fancy-be
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:38.238-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

Sunrise soon 6:49 am | Search | ENG US | 06:07 AM 25-11-2025

Lab setup instructions and requirements

End Lab 00:36:17

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
--source-instance=backend
```

3. Run the following to confirm the instance templates were created:

```
gcloud compute instance-templates list
```

Example output:

```
NAME: fancy-be
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2023-07-25T14:52:21.933-07:00

NAME: fancy-fe
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2023-07-25T14:52:15.442-07:00
```

4. With the instance templates created, run the following to delete the `backend` VM to save resource space:

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.41.251.11
STATUS: RUNNING
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ ^C
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances stop frontend --zone=us-central1-c
Stopping instance(s) frontend...done.
Updated [https://compute.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/frontend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances stop backend --zone=us-central1-c
Stopping instance(s) backend...done.
Updated [https://compute.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-templates create fancy-fe \
    --source-instance-zone=us-central1-c \
    --source-instance=frontend
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/instanceTemplates/fancy-fe].
NAME: fancy-fe
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:12.273-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-templates create fancy-be \
    --source-instance-zone=us-central1-c \
    --source-instance=backend
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/instanceTemplates/fancy-be].
NAME: fancy-be
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:38.238-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-templates list
NAME: fancy-be
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:38.238-08:00

NAME: fancy-fe
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:12.273-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

Sunrise soon 6:49 am | Search | ENG US | 06:08 AM 25-11-2025

Lab setup instructions and requirements

End Lab 00:35:27

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
NAME: fancy-fe
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2023-07-25T14:52:15.442-07:00
```

4. With the instance templates created, run the following to delete the `backend` VM to save resource space:

```
gcloud compute instances delete backend --zone=us-central1-c
```

5. Type and enter **y** when prompted.

Normally, you could delete the `frontend` VM as well, but you need to use it to update the instance template later in the lab.

Create managed instance groups

1. Next, run the following commands to create two managed instance groups, one for the frontend and one for the backend:

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances stop backend --zone=us-central1-c
Stopping instance(s) backend...done.
Updated [https://compute.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-templates create fancy-fe \
    --source-instance-zone=us-central1-c \
    --source-instance=frontend
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/instanceTemplates/fancy-fe].
NAME: fancy-fe
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:12.273-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-templates create fancy-be \
    --source-instance-zone=us-central1-c \
    --source-instance=backend
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/instanceTemplates/fancy-be].
NAME: fancy-be
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:38.238-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-templates list
NAME: fancy-be
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:38.238-08:00

NAME: fancy-fe
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
CREATION_TIMESTAMP: 2025-11-24T16:37:12.273-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances delete backend --zone=us-central1-c
The following instances will be deleted. Any attached disks configured to be auto-deleted will be deleted unless they are attached to any other instances or the `--keep-disks` flag is given
and specifies them for keeping. Deleting a disk is irreversible and any data on the disk will be lost.
 - [backend] in [us-central1-c]

Do you want to continue (Y/n)?  y

Deleted [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

Trending videos
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ENG
US

06:09 AM
25-11-2025

the instance template later in the lab.

Lab setup instructions and requirements

End Lab 00:34:38

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Create managed instance groups

1. Next, run the following commands to create two managed instance groups, one for the frontend and one for the backend:

```
gcloud compute instance-groups managed create fancy-fe-mig \
    --zone=us-central1-c \
    --base-instance-name fancy-fe \
    --size 2 \
    --template fancy-fe
```

```
gcloud compute instance-groups managed create fancy-be-mig \
    --zone=us-central1-c \
    --base-instance-name fancy-be \
    --size 2 \
    --template fancy-be
```

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
CREATION_TIMESTAMP: 2025-11-24T16:37:12.273-08:00
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instances delete backend --zone=us-central1-c
The following instances will be deleted. Any attached disks configured to be auto-deleted will be deleted unless they are attached to any other instances or the `--keep-disks` flag is given
and specifies them for keeping. Deleting a disk is irreversible and any data on the disk will be lost.
 - [backend] in [us-central1-c]

Do you want to continue (Y/n)?  y

Deleted [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed create fancy-fe-mig \
    --zone=us-central1-c \
    --base-instance-name fancy-fe \
    --size 2 \
    --template fancy-fe
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-fe-mig].
NAME: fancy-fe-mig
LOCATION: us-central1-c
SCOPE: zone
BASE_INSTANCE_NAME: fancy-fe
SIZE: 0
TARGET_SIZE: 2
INSTANCE_TEMPLATE: fancy-fe
AUTOSCALED: no
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed create fancy-be-mig \
    --zone=us-central1-c \
    --base-instance-name fancy-be \
    --size 2 \
    --template fancy-be
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-be-mig].
NAME: fancy-be-mig
LOCATION: us-central1-c
SCOPE: zone
BASE_INSTANCE_NAME: fancy-be
SIZE: 0
TARGET_SIZE: 2
INSTANCE_TEMPLATE: fancy-be
AUTOSCALED: no
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

10°C Clear | Search | ENG US | 06:10 AM 25-11-2025

on the `base-instance-name` specified with random characters appended.

2. Run the following to ensure that for your application, the `frontend` microservice runs on port 8080, and the `backend` microservice runs on port 8081 for `orders`, and port 8082 for `products`:

```
gcloud compute instance-groups set-named-ports fancy-fe-mig \
    --zone=us-central1-c \
    --named-ports frontend:8080
```

```
gcloud compute instance-groups set-named-ports fancy-be-mig \
    --zone=us-central1-c \
    --named-ports orders:8081,products:8082
```

Since these are non-standard ports, you specify named ports to identify these. Named ports are key:value pair metadata representing the service name and the port that it's running on. Named ports can be assigned to an instance group, which indicates that the service is available on all instances in the group. This information is used by the HTTP Load Balancing service that you configure later.

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
Deleted [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instances/backend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed create fancy-fe-mig \
    --zone=us-central1-c \
    --base-instance-name fancy-fe \
    --size 2 \
    --template fancy-fe
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-fe-mig].
NAME: fancy-fe-mig
LOCATION: us-central1-c
SCOPE: zone
BASE_INSTANCE_NAME: fancy-fe
SIZE: 0
TARGET_SIZE: 2
INSTANCE_TEMPLATE: fancy-fe
AUTOSCALED: no
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed create fancy-be-mig \
    --zone=us-central1-c \
    --base-instance-name fancy-be \
    --size 2 \
    --template fancy-be
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-be-mig].
NAME: fancy-be-mig
LOCATION: us-central1-c
SCOPE: zone
BASE_INSTANCE_NAME: fancy-be
SIZE: 0
TARGET_SIZE: 2
INSTANCE_TEMPLATE: fancy-be
AUTOSCALED: no
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups set-named-ports fancy-fe-mig \
    --zone=us-central1-c \
    --named-ports frontend:8080
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroups/fancy-fe-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups set-named-ports fancy-be-mig \
    --zone=us-central1-c \
    --named-ports orders:8081,products:8082
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroups/fancy-be-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

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service is available on all instances in the group. This information is used by the HTTP Load Balancing service that you configure later.

Lab setup instructions and requirements

End Lab 00:32:31

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Configure autohealing

To improve the availability of the application itself and to verify it is responding, configure an autohealing policy for the managed instance groups.

An autohealing policy relies on an application-based health check to verify that an app is responding as expected. Checking that an app responds is more precise than simply verifying that an instance is in a RUNNING state, which is the default behavior.

Note: Separate health checks are used for load balancing and for autohealing. Health checks for load balancing can and should be more aggressive because these health checks determine whether an instance receives user traffic. You want to catch non-responsive instances quickly so you can redirect traffic if necessary. In contrast, health checking for autohealing causes Compute Engine to proactively replace failing instances, so this health check should be more conservative than a load balancing health check.

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https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
SCOPE: zone
BASE_INSTANCE_NAME: fancy-fe
SIZE: 0
TARGET_SIZE: 2
INSTANCE_TEMPLATE: fancy-fe
AUTOSCALED: no
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed create fancy-be-mig \
    --zone=us-central1-c \
    --base-instance-name fancy-be \
    --size 2 \
    --template fancy-be
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-be-mig].
NAME: fancy-be-mig
LOCATION: us-central1-c
SCOPE: zone
BASE_INSTANCE_NAME: fancy-be
SIZE: 0
TARGET_SIZE: 2
INSTANCE_TEMPLATE: fancy-be
AUTOSCALED: no
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups set-named-ports fancy-fe-mig \
    --zone=us-central1-c \
    --named-ports frontend:8080
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroups/fancy-fe-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups set-named-ports fancy-be-mig \
    --zone=us-central1-c \
    --named-ports orders:8081,products:8082
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroups/fancy-be-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute health-checks create http fancy-fe-hc \
    --port 8080 \
    --check-interval 30s \
    --healthy-threshold 1 \
    --timeout 10s \
    --unhealthy-threshold 3
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/healthChecks/fancy-fe-hc].
NAME: fancy-fe-hc
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

10°C Clear | Search | ENG US | 06:12 AM 25-11-2025

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) Open Editor

```
    --template fancy-be
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-be-mig].
NAME: fancy-be-mig
LOCATION: us-central1-c
SCOPE: zone
BASE_INSTANCE_NAME: fancy-be
SIZE: 0
TARGET_SIZE: 2
INSTANCE_TEMPLATE: fancy-be
AUTOSCALED: no
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups set-named-ports fancy-fe-mig \
    --zone=us-central1-c \
    --named-ports frontend:8080
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroups/fancy-fe-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups set-named-ports fancy-be-mig \
    --zone=us-central1-c \
    --named-ports orders:8081,products:8082
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroups/fancy-be-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute health-checks create http fancy-fe-hc \
    --port 8080 \
    --check-interval 30s \
    --healthy-threshold 1 \
    --timeout 10s \
    --unhealthy-threshold 3
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/healthChecks/fancy-fe-hc].
NAME: fancy-fe-hc
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute health-checks create http fancy-be-hc \
    --port 8081 \
    --request-path=/api/orders \
    --check-interval 30s \
    --healthy-threshold 1 \
    --timeout 10s \
    --unhealthy-threshold 3
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/healthChecks/fancy-be-hc].
NAME: fancy-be-hc
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

Lab setup instructions and requirements

End Lab 00:31:30

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
    --unhealthy-threshold 3
```

2. Run the following to create a firewall rule that allows the health check probes to connect to the microservices on ports 8080-8081:

```
gcloud compute firewall-rules create allow-health-check \
    --allow tcp:8080-8081 \
    --source-ranges 130.211.0.0/22,35.191.0.0/16 \
    --network default
```

3. Apply the health checks to their respective services with the following commands:

```
gcloud compute instance-groups managed update fancy-fe-mig \
    --zone=us-central1-c \
    --health-check fancy-fe-hc \
    --initial-delay 300
```

Lab setup instructions and requirements

End Lab 00:27:16

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
gcloud compute instance-groups managed update fancy-fe-mig \
    --zone=us-central1-c \
    --health-check fancy-fe-hc \
    --initial-delay 300
```

```
gcloud compute instance-groups managed update fancy-be-mig \
    --zone=us-central1-c \
    --health-check fancy-be-hc \
    --initial-delay 300
```

Note: It can take 15 minutes before autohealing begins monitoring instances in the group.

4. Continue with the lab to allow some time for autohealing to monitor the instances in the group. You intend simulating a failure to test the autohealing at the end of the lab.

Click **Check my progress** to verify the objective.

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https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
    --unhealthy-threshold 3
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/healthChecks/fancy-fe-hc].
NAME: fancy-fe-hc
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute health-checks create http fancy-be-hc \
    --port 8081 \
    --request-path=/api/orders \
    --check-interval 30s \
    --healthy-threshold 1 \
    --timeout 10s \
    --unhealthy-threshold 3
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/healthChecks/fancy-be-hc].
NAME: fancy-be-hc
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute firewall-rules create allow-health-check \
    --allow tcp:8080-8081 \
    --source-ranges 130.211.0.0/22,35.191.0.0/16 \
    --network default
Creating firewall...working..Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/firewalls/allow-health-check].
Creating firewall...done.
NAME: allow-health-check
NETWORK: default
DIRECTION: INGRESS
PRIORITY: 1000
ALLOW: tcp:8080-8081
DENY:
DISABLED: False
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed update fancy-fe-mig \
    --zone=us-central1-c \
    --health-check fancy-fe-hc \
    --initial-delay 300
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-fe-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed update fancy-be-mig \
    --zone=us-central1-c \
    --health-check fancy-be-hc \
    --initial-delay 300
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-be-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

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Lab setup instructions and requirements

End Lab 00:26:53

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

group.

4. Continue with the lab to allow some time for autohealing to monitor the instances in the group. You intend simulating a failure to test the autohealing at the end of the lab.

Click **Check my progress** to verify the objective.

Create managed instance groups

Check my progress

Assessment completed!

Task 6. Create load balancers

To complement your managed instance groups, use HTTP(S) Load Balancers to serve traffic to the frontend and backend microservices, and use mappings to send traffic to the proper backend services based on pathing rules. This exposes a single load balanced IP for all services.

Dashboard – qwiklabs-gcp-03-4a1... | VM instances – Compute Engine

https://console.cloud.google.com/compute/instances?project=qwiklabs-gcp-03-4a184603f259

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Google Cloud | qwiklabs-gcp-03-4a184603f259 | Search (/) for resources, docs, products, and more | Search

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VM instances

Filter: Enter property name or value

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
	fancy-be-7th1	us-central1-c			10.128.0.7 (nic0)	34.46.48.14 (nic0)	SSH
✓	fancy-be-b9c8	us-central1-c		fancy-be-mig	10.128.0.6 (nic0)	34.41.251.11 (nic0)	SSH
✓	fancy-fe-01nx	us-central1-c		fancy-fe-mig	10.128.0.4 (nic0)	34.133.249.248 (nic0)	SSH
✓	fancy-fe-5hh6	us-central1-c		fancy-fe-mig	10.128.0.5 (nic0)	35.238.116.101 (nic0)	SSH
	frontend	us-central1-c			10.128.0.3 (nic0)		SSH

Related actions

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Lab setup instructions and requirements

End Lab 00:26:05

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Task 6. Create load balancers

To complement your managed instance groups, use HTTP(S) Load Balancers to serve traffic to the frontend and backend microservices, and use mappings to send traffic to the proper backend services based on pathing rules. This exposes a single load balanced IP for all services.

You can learn more about the Load Balancing options on Google Cloud: Overview of Load Balancing.

Create the HTTP(S) load balancer

Google Cloud offers many different types of load balancers. For this lab, you use an HTTP(S) Load Balancer for your traffic. An HTTP load balancer is structured as follows:

- A forwarding rule directs incoming requests to a target HTTP proxy.
- The target HTTP proxy checks each request against a URL map to determine the appropriate backend service for the request.
- The backend service directs each request to an appropriate backend based on

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Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 00:25:16

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Open Google Cloud console

Username
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

1. Run the following to create health checks that are used to determine which instances are capable of serving traffic for each service:

```
gcloud compute http-health-checks create fancy-fe-frontend-hc \
  --request-path / \
  --port 8080
```

```
gcloud compute http-health-checks create fancy-be-orders-hc \
  --request-path /api/orders \
  --port 8081
```

```
gcloud compute http-health-checks create fancy-be-products-hc \
  --request-path /api/products \
  --port 8082
```

Note: These health checks are for the load balancer and only handle directing traffic from the load balancer; they do not cause the managed instance groups to recreate

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
ALLOW: tcp:8080-8081
DENY:
DISABLED: False
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed update fancy-fe-mig \
    --zone=us-central1-c \
    --health-check fancy-fe-hc \
    --initial-delay 300
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-fe-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute instance-groups managed update fancy-be-mig \
    --zone=us-central1-c \
    --health-check fancy-be-hc \
    --initial-delay 300
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/zones/us-central1-c/instanceGroupManagers/fancy-be-mig].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute http-health-checks create fancy-fe-frontend-hc \
  --request-path / \
  --port 8080
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/httpHealthChecks/fancy-fe-frontend-hc].
NAME: fancy-fe-frontend-hc
HOST:
PORT: 8080
REQUEST_PATH: /
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute http-health-checks create fancy-be-orders-hc \
  --request-path /api/orders \
  --port 8081
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/httpHealthChecks/fancy-be-orders-hc].
NAME: fancy-be-orders-hc
HOST:
PORT: 8081
REQUEST_PATH: /api/orders
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute http-health-checks create fancy-be-products-hc \
  --request-path /api/products \
  --port 8082
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/httpHealthChecks/fancy-be-products-hc].
NAME: fancy-be-products-hc
HOST:
PORT: 8082
REQUEST_PATH: /api/products
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

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Lab setup instructions and requirements

End Lab 00:24:27

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Open Google Cloud console

Username
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

2. Run the following to create backend services that are the target for load-balanced traffic; the backend services use the health checks and named ports you created:

```
gcloud compute backend-services create fancy-fe-frontend \
  --http-health-checks fancy-fe-frontend-hc \
  --port-name frontend \
  --global
```

```
gcloud compute backend-services create fancy-be-orders \
  --http-health-checks fancy-be-orders-hc \
  --port-name orders \
  --global
```

```
gcloud compute backend-services create fancy-be-products \
  --http-health-checks fancy-be-products-hc \
  --port-name products \
  --global
```

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/httpHealthChecks/fancy-be-orders-hc].
NAME: fancy-be-orders-hc
HOST:
PORT: 8081
REQUEST_PATH: /api/orders
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute http-health-checks create fancy-be-products-hc \
  --request-path /api/products \
  --port 8082
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/httpHealthChecks/fancy-be-products-hc].
NAME: fancy-be-products-hc
HOST:
PORT: 8082
REQUEST_PATH: /api/products
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-fe-frontend \
  --http-health-checks fancy-fe-frontend-hc \
  --port-name frontend \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-fe-frontend].
NAME: fancy-fe-frontend
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-be-orders \
  --http-health-checks fancy-be-orders-hc \
  --port-name orders \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-orders].
NAME: fancy-be-orders
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-be-products \
  --http-health-checks fancy-be-products-hc \
  --port-name products \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-products].
NAME: fancy-be-products
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

Lab setup instructions and requirements

End Lab 00:22:42

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
--port-name products \
--global
```

3. Run the following to add the load balancer's backend services:

```
gcloud compute backend-services add-backend fancy-fe-frontend \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-fe-mig \
  --global
```

```
gcloud compute backend-services add-backend fancy-be-orders \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-be-mig \
  --global
```

```
gcloud compute backend-services add-backend fancy-be-products \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-be-mig \
  --global
```

Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-03-4a184603f259&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/httpHealthChecks/fancy-be-orders-hc].
NAME: fancy-be-orders-hc
HOST:
PORT: 8081
REQUEST_PATH: /api/orders
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute http-health-checks create fancy-be-products-hc \
  --request-path /api/products \
  --port 8082
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/httpHealthChecks/fancy-be-products-hc].
NAME: fancy-be-products-hc
HOST:
PORT: 8082
REQUEST_PATH: /api/products
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-fe-frontend \
  --http-health-checks fancy-fe-frontend-hc \
  --port-name frontend \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-fe-frontend].
NAME: fancy-fe-frontend
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-be-orders \
  --http-health-checks fancy-be-orders-hc \
  --port-name orders \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-orders].
NAME: fancy-be-orders
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-be-products \
  --http-health-checks fancy-be-products-hc \
  --port-name products \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-products].
NAME: fancy-be-products
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

Lab setup instructions and requirements

End Lab 00:21:53

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
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

```
--port-name products \
--global
```

3. Run the following to add the load balancer's backend services:

```
gcloud compute backend-services add-backend fancy-fe-frontend \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-fe-mig \
  --global
```

```
gcloud compute backend-services add-backend fancy-be-orders \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-be-mig \
  --global
```

```
gcloud compute backend-services add-backend fancy-be-products \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-be-mig \
  --global
```

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CLOUD SHELL
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```
REQUEST_PATH: /api/products
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-fe-frontend \
  --http-health-checks fancy-fe-frontend-hc \
  --port-name frontend \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-fe-frontend].
NAME: fancy-fe-frontend
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-be-orders \
  --http-health-checks fancy-be-orders-hc \
  --port-name orders \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-orders].
NAME: fancy-be-orders
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-be-products \
  --http-health-checks fancy-be-products-hc \
  --port-name products \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-products].
NAME: fancy-be-products
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services add-backend fancy-fe-frontend \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-fe-mig \
  --global
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-fe-frontend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services add-backend fancy-be-orders \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-be-mig \
  --global
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-orders].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute url-maps create fancy-map \
  --default-service fancy-fe-frontend
```

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Dashboard – qwiklabs-gcp-03-4 | VM instances – Compute Engine – qv

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CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) | Open Editor

```
  --http-health-checks fancy-be-products-hc \
  --port-name products \
  --global
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-products].
NAME: fancy-be-products
BACKENDS:
PROTOCOL: HTTP
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services add-backend fancy-fe-frontend \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-fe-mig \
  --global
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-fe-frontend].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services add-backend fancy-be-orders \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-be-mig \
  --global
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-orders].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute url-maps create fancy-map \
  --default-service fancy-fe-frontend
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/urlMaps/fancy-map].
NAME: fancy-map
DEFAULT_SERVICE: backendServices/fancy-fe-frontend
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute url-maps add-path-matcher fancy-map \
   --default-service fancy-fe-frontend \
   --path-matcher-name orders \
   --path-rules "/api/orders=fancy-be-orders,/api/products=fancy-be-products"
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/urlMaps/fancy-map].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute target-http-proxies create fancy-proxy \
  --url-map fancy-map
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/targetHttpProxies/fancy-proxy].
NAME: fancy-proxy
URL_MAP: fancy-map
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute forwarding-rules create fancy-http-rule \
  --global \
  --target-http-proxy fancy-proxy \
  --ports 80
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/forwardingRules/fancy-http-rule].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$
```

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https://partner.skills.google/course_templates/638/labs/598619

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fancy-be-products 6/7

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Build a Website on Google Cloud > Host a Web App on Google Cloud Using Compute Engine

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Lab setup instructions and requirements

End Lab 00:16:07

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

student-02-d0648a0e4ac1(

Password

EfZIE61lWJhP

Project ID

qwiklabs-gcp-03-4a18460(

7. Run the following command to create a global forwarding rule that ties a public IP address and port to the proxy:

```
gcloud compute forwarding-rules create fancy-http-rule \
  --global \
  --target-http-proxy fancy-proxy \
  --ports 80
```

Click **Check my progress** to verify the objective.

Create HTTP(S) load balancers

Check my progress

Assessment completed!

Update the configuration

Now that you have a new static IP address, update the code on the `frontend` to point

Note:
Here, the assessment can show error for “fancy-be-products”

Tips:

1. Wait for 2 min then check again.
2. Run all the commands again for the “fancy-be-products”. No need to worry about the duplicate resources, if the resources are not made they will be created or it will show error resource already exists.

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Task 2. Create a Clou Storage bucket

Task 3. Clone a source repository

Task 4. Create the Compute Engine instances

Task 5. Create managed instance groups

Task 6. Create load balancers

Task 7. Scale Compute Engine

Task 8. Update the website

Congratulations!

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Lab setup instructions and requirements

End Lab 00:15:24

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Open Google Cloud console

Username
student-02-d0648a0e4ac1(

Password
EfZIE61lWJhP

Project ID
qwiklabs-gcp-03-4a18460(

Update the configuration

Now that you have a new static IP address, update the code on the `frontend` to point to this new address instead of the ephemeral address used earlier that pointed to the `backend` instance.

1. In Cloud Shell, run the following to change to the `react-app` folder that houses the `.env` file, which holds the configuration:

```
cd ~/monolith-to-microservices/react-app/
```

2. Find the IP address for the Load Balancer by running the following command:

```
gcloud compute forwarding-rules list --global
```

Example output:

```
NAME: fancy-http-rule
REGION:
```

CLOUD SHELL
Terminal (qwiklabs-gcp-03-4a184603f259) Open Editor

```
NAME: fancy-proxy
URL_MAP: fancy-map
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute forwarding-rules create fancy-http-rule \
  --global \
  --target-http-proxy fancy-proxy \
  --ports 80
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/forwardingRules/fancy-http-rule].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute http-health-checks create fancy-be-products-hc \
  --request-path /api/products \
  --port 8082
ERROR: (gcloud.compute.http-health-checks.create) Could not fetch resource:
 - The resource 'projects/qwiklabs-gcp-03-4a184603f259/global/httpHealthChecks/fancy-be-products-hc' already exists

student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services create fancy-be-products \
  --http-health-checks fancy-be-products-hc \
  --port-name products \
  --global
ERROR: (gcloud.compute.backend-services.create) Could not fetch resource:
 - The resource 'projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-products' already exists

student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute backend-services add-backend fancy-be-products \
  --instance-group-zone=us-central1-c \
  --instance-group fancy-be-mig \
  --global
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-4a184603f259/global/backendServices/fancy-be-products].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ gcloud compute url-maps add-path-matcher fancy-map \
   --default-service fancy-fe-frontend \
   --path-matcher-name orders \
   --path-rules "/api/orders=fancy-be-orders,/api/products=fancy-be-products"
ERROR: (gcloud.compute.url-maps.add-path-matcher) Cannot create a new host rule with host [*] because the host is already part of a host rule that references the path matcher [orders].
student_02_d0648a0e4ac1@cloudshell:~ (qwiklabs-gcp-03-4a184603f259)$ cd ~/monolith-to-microservices/react-app/
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/react-app (qwiklabs-gcp-03-4a184603f259)$ gcloud compute forwarding-rules list --global
NAME: fancy-http-rule
REGION:
IP_ADDRESS: 34.107.195.98
IP_PROTOCOL: TCP
TARGET: fancy-proxy
student_02_d0648a0e4ac1@cloudshell:~/monolith-to-microservices/react-app (qwiklabs-gcp-03-4a184603f259)$
```

(177) Host a Web App on Google | (178) Hosting a Web App on Go | Labs-Solutions/Hosting a Web A | DC Infotech Internship Portal | Build a Website on Google Clou | Build a Website on Google

https://partner.skills.google/course_templates/638/labs/598619

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5336 1

Build a Website on Google Cloud > Host a Web App on Google Cloud Using Compute Engine

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You check the application later in the lab.

Lab setup instructions and requirements

End Lab 01:00:33

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

student-02-953d929d59b2(

Password

L3fZEAou87Gv

Project ID

qwiklabs-gcp-04-d8c544a

Task 7. Scale Compute Engine

So far, you have created two managed instance groups with two instances each. This configuration is fully functional, but a static configuration regardless of load. Next, you create an autoscaling policy based on utilization to automatically scale each managed instance group.

Automatically resize by utilization

- To create the autoscaling policy, execute the following:

```
gcloud compute instance-groups managed set-autoscaling \
  fancy-fe-mig \
  --zone=us-west1-b \
  --max-num-replicas 2 \
```

100/100

Task 3. Clone a sou repository

Task 4. Create the Compute Engine instances

Task 5. Create managed instance groups

Task 6. Create load balancers

Task 7. Scale Compute Engine

Task 8. Update the website

Congratulations!

Note:

Here, the lab was starts again as Task 6 keep showing the error for ”Create HTTP(S) load balancers”

Tip:

1. Wait for 2 mins and check again if the issue persists, then run the lab again.

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07:10 PM 25-11-2025

Lab setup instructions and requirements

End Lab 01:00:07

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
student-02-953d929d59b2(

Password
L3fZEAou87Gv

Project ID
qwiklabs-gcp-04-d8c544a

So far, you have created two managed instance groups with two instances each. This configuration is fully functional, but a static configuration regardless of load. Next, you create an autoscaling policy based on utilization to automatically scale each managed instance group.

Automatically resize by utilization

- To create the autoscaling policy, execute the following:

```
gcloud compute instance-groups managed set-autoscaling \
  fancy-fe-mig \
  --zone=us-west1-b \
  --max-num-replicas 2 \
  --target-load-balancing-utilization 0.60
```

```
gcloud compute instance-groups managed set-autoscaling \
  fancy-be-mig \
```

Dashboard – qwiklabs-gcp-04-d8 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-d8c544aadabf&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-04-d8c544aadabf) (qwiklabs-gcp-04-d8c544aadabf) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
Welcome to Cloud Shell! Type "help" to get started, or type "gemini" to try prompting with Gemini CLI.
Your Cloud Platform project in this session is set to qwiklabs-gcp-04-d8c544aadabf.
Use `gcloud config set project [PROJECT_ID]` to change to a different project.
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ gcloud compute instance-groups managed set-autoscaling \
  fancy-fe-mig \
  --zone=us-west1-b \
  --max-num-replicas 2 \
  --target-load-balancing-utilization 0.60
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-fe-mig-pewf].
---
autoscalingPolicy:
  coolDownPeriodSec: 60
  loadBalancingUtilization:
    utilizationTarget: 0.6
  maxNumReplicas: 2
  minNumReplicas: 2
  mode: ON
creationTimestamp: '2025-11-25T05:32:05.566-08:00'
id: '13041679692658158 66'
kind: compute#autoscaler
name: fancy-fe-mig-pewf
recommendedSize: 2
selfLink: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-fe-mig-pewf
status: ACTIVE
statusDetails:
- message: The autoscaler is configured to scale based on a load balancing signal
    but the instance group has not received any utilization data from the load balancer
    or the utilization is constantly 0. Check that the load balancing configuration
    is working.
  type: MISSING_LOAD_BALANCING_DATA_POINTS
target: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instanceGroupManagers/fancy-fe-mig
zone: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$
```

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Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 00:59:20

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
student-02-953d929d59b2(

Password
L3fZEAou87Gv

Project ID
qwiklabs-gcp-04-d8c544a

- To create the autoscaling policy, execute the following:

```
gcloud compute instance-groups managed set-autoscaling \
  fancy-fe-mig \
  --zone=us-west1-b \
  --max-num-replicas 2 \
  --target-load-balancing-utilization 0.60
```

```
gcloud compute instance-groups managed set-autoscaling \
  fancy-be-mig \
  --zone=us-west1-b \
  --max-num-replicas 2 \
  --target-load-balancing-utilization 0.60
```

These commands create an autoscaler on the managed instance groups that automatically adds instances when utilization is above 60% utilization, and removes instances when the load balancer is below 60% utilization.

100/100

Dashboard – qwiklabs-gcp-04-d8 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-d8c544aadabf&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-04-d8c544aadabf) (qwiklabs-gcp-04-d8c544aadabf) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
    is working.
  type: MISSING_LOAD_BALANCING_DATA_POINTS
target: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instanceGroupManagers/fancy-fe-mig
zone: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ gcloud compute instance-groups managed set-autoscaling \
  fancy-be-mig \
  --zone=us-west1-b \
  --max-num-replicas 2 \
  --target-load-balancing-utilization 0.60
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-be-mig-cayl].
---
autoscalingPolicy:
  coolDownPeriodSec: 60
  loadBalancingUtilization:
    utilizationTarget: 0.6
  maxNumReplicas: 2
  minNumReplicas: 2
  mode: ON
creationTimestamp: '2025-11-25T05:32:11.370-08:00'
id: '4424898890235908404'
kind: compute#autoscaler
name: fancy-be-mig-cayl
recommendedSize: 2
selfLink: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-be-mig-cayl
status: ACTIVE
statusDetails:
- message: The autoscaler is configured to scale based on a load balancing signal
    but the instance group has not received any utilization data from the load balancer
    or the utilization is constantly 0. Check that the load balancing configuration
    is working.
  type: MISSING_LOAD_BALANCING_DATA_POINTS
target: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instanceGroupManagers/fancy-be-mig
zone: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$
```

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Dashboard – qwiklabs-gcp-04-d8 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-d8c544aadabf&pli=1&cloudshell=true

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CLOUD SHELL
Terminal (qwiklabs-gcp-04-d8c544aadabf) (qwiklabs-gcp-04-d8c544aadabf) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
zone: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ gcloud compute instance-groups managed set-autoscaling \
  fancy-be-mig \
  --zone=us-west1-b \
  --max-num-replicas 2 \
  --target-load-balancing-utilization 0.60
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-be-mig-cayl].
---
autoscalingPolicy:
  coolDownPeriodSec: 60
  loadBalancingUtilization:
    utilizationTarget: 0.6
  maxNumReplicas: 2
  minNumReplicas: 2
  mode: ON
creationTimestamp: '2025-11-25T05:32:11.370-08:00'
id: '4424898890235908404'
kind: compute#autoscaler
name: fancy-be-mig-cayl
recommendedSize: 2
selfLink: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-be-mig-cayl
status: ACTIVE
statusDetails:
- message: The autoscaler is configured to scale based on a load balancing signal
    but the instance group has not received any utilization data from the load balancer
    or the utilization is constantly 0. Check that the load balancing configuration
    is working.
  type: MISSING_LOAD_BALANCING_DATA_POINTS
target: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instanceGroupManagers/fancy-be-mig
zone: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ gcloud compute backend-services update fancy-fe-frontend \
    --enable-cdn --global
No change requested; skipping update for [fancy-fe-frontend].
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$
```

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Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 00:58:29

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
student-02-953d929d59b2(

Password
L3fZEAou87Gv

Project ID
qwiklabs-gcp-04-d8c544a

Task 8. Update the website

Update the instance template

Existing instance templates are not editable; however, since your instances are stateless and all configuration is done through the startup script, you only need to change the instance template if you want to change the template settings. In this task, you make a simple change to use a larger machine type and push that out.

Complete the steps that follow to perform the following actions:

- Update the `frontend` instance, which acts as the basis for the instance template. During the update, put a file on the updated version of the instance template's image, then update the instance template, roll out the new template, and then confirm the file exists on the managed instance group instances.

100/100

confirm the file exists on the managed instance group instances.

- Modify the machine type of your instance template by switching from the `e2-standard-2` machine type to `e2-small`.

1. Run the following command to modify the machine type of the frontend instance:

```
gcloud compute instances set-machine-type frontend \
  --zone=us-west1-b \
  --machine-type e2-small
```

2. Run the following command to create the new Instance Template:

```
gcloud compute instance-templates create fancy-fe-new \
    --region=$REGION \
    --source-instance=frontend \
    --source-instance-zone=us-west1-b
```

3. Roll out the updated instance template to the Managed Instance Group with the following command:

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Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
  --max-num-replicas 2 \
  --target-load-balancing-utilization 0.60
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-be-mig-cayl].
---
autoscalingPolicy:
  coolDownPeriodSec: 60
  loadBalancingUtilization:
    utilizationTarget: 0.6
  maxNumReplicas: 2
  minNumReplicas: 2
  mode: ON
creationTimestamp: '2025-11-25T05:32:11.370-08:00'
id: '4424898890235908404'
kind: compute#autoscaler
name: fancy-be-mig-cayl
recommendedSize: 2
selfLink: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-be-mig-cayl
status: ACTIVE
statusDetails:
- message: The autoscaler is configured to scale based on a load balancing signal
    but the instance group has not received any utilization data from the load balancer
    or the utilization is constantly 0. Check that the load balancing configuration
    is working.
  type: MISSING_LOAD_BALANCING_DATA_POINTS
target: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instanceGroupManagers/fancy-be-mig
zone: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ gcloud compute backend-services update fancy-fe-frontend \
    --enable-cdn --global
No change requested; skipping update for [fancy-fe-frontend].
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ gcloud compute instances set-machine-type frontend \
  --zone=us-west1-b \
  --machine-type e2-small
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instances/frontend].
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$
```

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Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 00:57:02

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
student-02-953d929d59b2(

Password
L3fZEAou87Gv

Project ID
qwiklabs-gcp-04-d8c544a

3. Roll out the updated instance template to the Managed Instance Group with the following command:

```
gcloud compute instance-groups managed rolling-action start-
update fancy-fe-mig \
  --zone=us-west1-b \
  --version template=fancy-fe-new
```

4. Wait 3 minutes, and then run the following to monitor the status of the update:

```
watch -n 2 gcloud compute instance-groups managed list-instances
fancy-fe-mig \
  --zone=us-west1-b
```

This process takes several minutes.

Ensure you have at least one instance in the following condition before proceeding:

- STATUS: **RUNNING**

100/100

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```
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ gcloud compute instance-groups managed rolling-action start-update fancy-fe-mig \
  --zone=us-west1-b \
  --version template=fancy-fe-new
Updated [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instanceGroupManagers/fancy-fe-mig].
---
autoHealingPolicies:
- healthCheck: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/global/healthChecks/fancy-fe-hc
  initialDelaySec: 300
baseInstanceName: fancy-fe
creationTimestamp: '2025-11-25T05:20:51.888-08:00'
currentActions:
  abandoning: 0
  creating: 1
  creatingWithoutRetries: 0
  deleting: 2
  none: 0
  recreating: 0
  refreshing: 0
  restarting: 0
  resuming: 0
  starting: 0
  stopping: 0
  suspending: 0
  verifying: 0
fingerprint: 7RMAZWm-oFo=
id: '3954171561221034972'
instanceGroup: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instanceGroups/fancy-fe-mig
instanceLifecyclePolicy:
  defaultActionOnFailure: REPAIR
  forceUpdateOnRepair: NO
instanceTemplate: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/global/instanceTemplates/fancy-fe-new
kind: compute#instanceGroupManager
listManagedInstancesResults: PAGELESS
```

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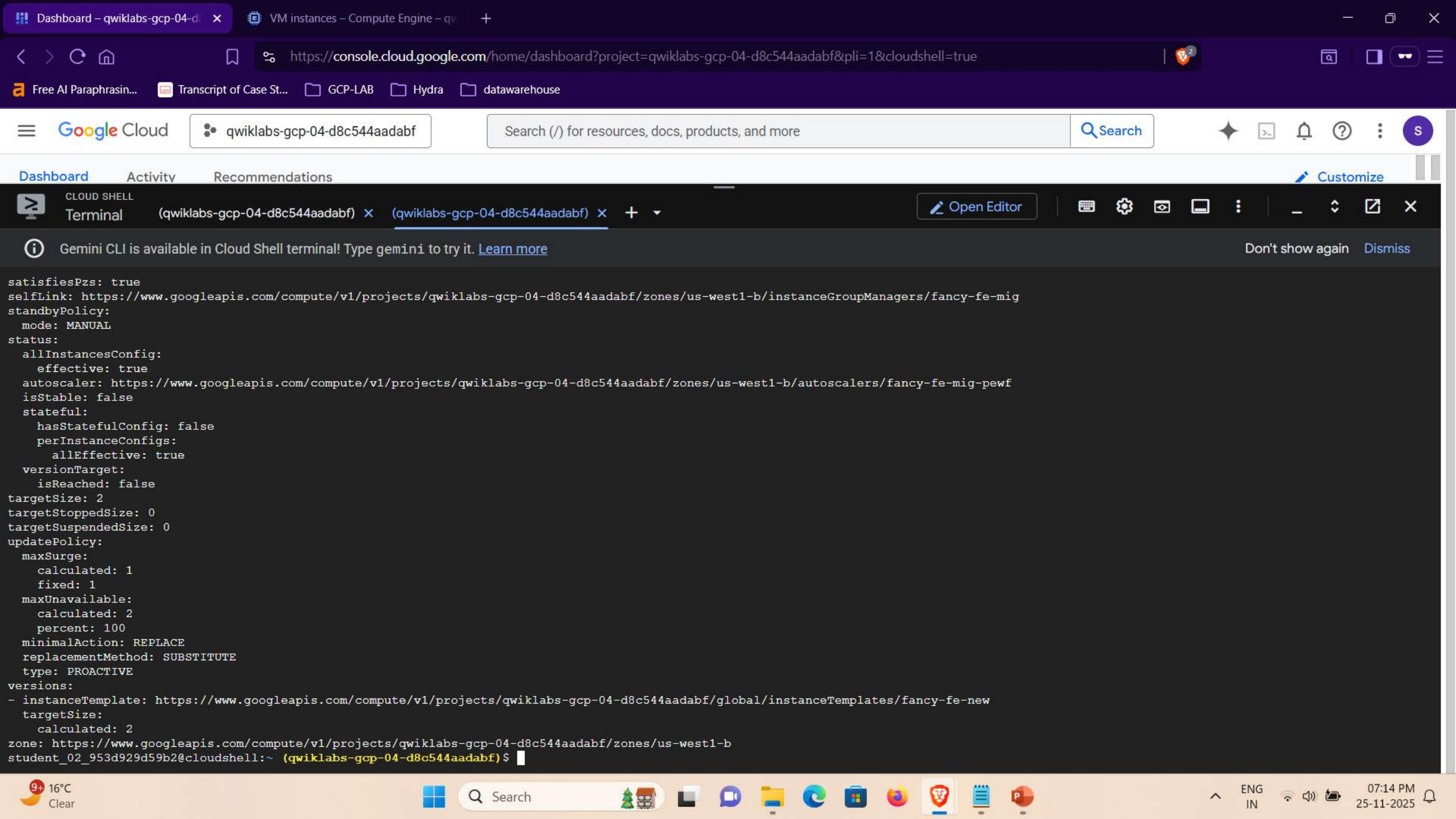
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CLOUD SHELL
Terminal
(qwiklabs-gcp-04-d8c544aadabf)
(qwiklabs-gcp-04-d8c544aadabf)
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Dismiss
satisfiesPzs: true
selfLink: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/instanceGroupManagers/fancy-fe-mig
standbyPolicy:
mode: MANUAL
status:
allInstancesConfig:
effective: true
autoscaler: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-fe-mig-pewf
isStable: false
stateful:
hasStatefulConfig: false
perInstanceConfigs:
allEffective: true
versionTarget:
isReached: false
targetSize: 2
targetStoppedSize: 0
targetSuspendedSize: 0
updatePolicy:
maxSurge:
calculated: 1
fixed: 1
maxUnavailable:
calculated: 2
percent: 100
minimalAction: REPLACE
replacementMethod: SUBSTITUTE
type: PROACTIVE
versions:
- instanceTemplate: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/global/instanceTemplates/fancy-fe-new
targetSize:
calculated: 2
zone: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$
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CLOUD SHELL
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Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
Every 2.0s: gcloud compute instance-groups managed list-instances fancy-fe-mig --zone=us-west1-b                cs-815608469588-default: Tue Nov 25 13:45:58 2025

NAME: fancy-fe-bfzx
ZONE: us-west1-b
STATUS: RUNNING
HEALTH_STATE: TIMEOUT
ACTION: VERIFYING
INSTANCE_TEMPLATE: fancy-fe-new
VERSION_NAME:
LAST_ERROR:

NAME: fancy-fe-dz1p
ZONE: us-west1-b
STATUS: STOPPING
HEALTH_STATE: UNKNOWN
ACTION: DELETING
INSTANCE_TEMPLATE:
VERSION_NAME:
LAST_ERROR:
```

Name of he instance which has the status of “RUNNING” fancy-fe-bfzx

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Dashboard – qwiklabs-gcp-04-d8 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-d8c544aadabf&pli=1&cloudshell=true

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Google Cloud | qwiklabs-gcp-04-d8c544aadabf | Search (/) for resources, docs, products, and more | Search

Dashboard | Activity | Recommendations | Customize

CLOUD SHELL
Terminal (qwiklabs-gcp-04-d8c544aadabf) (qwiklabs-gcp-04-d8c544aadabf) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
status:
  allInstancesConfig:
    effective: true
  autoscaler: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/autoscalers/fancy-fe-mig-pewf
  isStable: false
  stateful:
    hasStatefulConfig: false
    perInstanceConfigs:
      allEffective: true
  versionTarget:
    isReached: false
targetSize: 2
targetStoppedSize: 0
targetSuspendedSize: 0
updatePolicy:
  maxSurge:
    calculated: 1
    fixed: 1
  maxUnavailable:
    calculated: 2
    percent: 100
  minimalAction: REPLACE
  replacementMethod: SUBSTITUTE
  type: PROACTIVE
versions:
- instanceTemplate: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/global/instanceTemplates/fancy-fe-new
  targetSize:
    calculated: 2
zone: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ watch -n 2 gcloud compute instance-groups managed list-instances fancy-fe-mig \
  --zone=us-west1-b
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$ gcloud compute instances describe fancy-fe-bfzx --zone=us-west1-b | grep machineType
machineType: https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-d8c544aadabf/zones/us-west1-b/machineTypes/e2-small
student_02_953d929d59b2@cloudshell:~ (qwiklabs-gcp-04-d8c544aadabf)$
```

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Dashboard – qwiklabs-gcp-04-d8 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-d8c544aadabf&pli=1&cloudshell=true

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Dashboard | Activity | Recommendations | Customize

CLOUD SHELL
Terminal (qwiklabs-gcp-04-d8c544aadabf) (qwiklabs-gcp-04-d8c544aadabf) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more | Don't show again | Dismiss

```
mv index.js.new index.js
mv: cannot stat 'index.js.new': No such file or directory
student_02_953d929d59b2@cloudshell:~/monolith-to-microservices/react-app/src/pages/Home (qwiklabs-gcp-04-d8c544aadabf)$ cat ~/monolith-to-microservices/react-app/src/pages/Home/index.js
/*
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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
*/
import React from "react";
import { Box, Paper, Typography } from "@mui/material";

export default function Home() {
  return (
    <Box sx={{ flexGrow: 1 }}>
      <Paper
        elevation={3}
        sx={{
          width: "800px",
          margin: "0 auto",
          padding: (theme) => theme.spacing(3, 2),
        }}
      >
        <Typography variant="h5">Fancy Fashion &amp;amp; Style Online</Typography>
        <br />
```

16°C Clear | Search | ENG IN | 07:19 PM 25-11-2025

Dashboard – qwiklabs-gcp-04-d8 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-d8c544aadabf&pli=1&cloudshell=true

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Dashboard | Activity | Recommendations | Customize

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```
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limitations under the License.
*/
import React from "react";
import { Box, Paper, Typography } from "@mui/material";

export default function Home() {
  return (
    <Box sx={{ flexGrow: 1 }}>
      <Paper
        elevation={3}
        sx={{
          width: "800px",
          margin: "0 auto",
          padding: (theme) => theme.spacing(3, 2),
        }}
      >
        <Typography variant="h5">Fancy Fashion &amp;amp; Style Online</Typography>
        <br />
        <Typography variant="body1">
          Tired of mainstream fashion ideas, popular trends and societal norms?
          This line of lifestyle products will help you catch up with the Fancy
          trend and express your personal style. Start shopping Fancy items now!
        </Typography>
      </Paper>
    </Box>
  );
}
student_02_953d929d59b2@cloudshell:~/monolith-to-microservices/react-app/src/pages/Home (qwiklabs-gcp-04-d8c544aadabf)$ cat ~/monolith-to-microservices/react-app/src/pages/Home/index.jscat ~/
monolith-to-microservices/react-app/src/pages/Home/index.js
```

16°C Clear | Search | ENG IN | 07:19 PM 25-11-2025

Dashboard – qwiklabs-gcp-04-d8 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-d8c544aadabf&pli=1&cloudshell=true

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Dashboard | Activity | Recommendations | Customize

CLOUD SHELL
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Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
(node:5062) [DEP0176] DeprecationWarning: fs.F_OK is deprecated, use fs.constants.F_OK instead
(Use `node --trace-deprecation ...` to show where the warning was created)
Creating an optimized production build...
Browserslist: caniuse-lite is outdated. Please run:
  npx update-browserslist-db@latest
  Why you should do it regularly: https://github.com/browserslist/update-db#readme
Compiled successfully.

File sizes after gzip:

  88.32 kB (+20 B)  build/static/js/main.613296d9.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  npm install -g serve
  serve -s build

Find out more about deployment here:

  https://cra.link/deployment


> frontend@0.1.0 postbuild
> node scripts/post-build.js ./build ../microservices/src/frontend/public

Deleting stale folder: ../microservices/src/frontend/public
Deleted stale destination folder: ../microservices/src/frontend/public
Copying files from ./build to ../microservices/src/frontend/public
Copied ./build to ../microservices/src/frontend/public successfully!
student_02_953d929d59b2@cloudshell:~/monolith-to-microservices/react-app (qwiklabs-gcp-04-d8c544aadabf)$
```

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Contents

Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 00:50:10

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
student-02-953d929d59b2(

Password
L3fZEAou87Gv

Project ID
qwiklabs-gcp-04-d8c544a

Note: In this example of a rolling replace, you specifically state that all machines can be replaced immediately through the `--max-unavailable` parameter. Without this parameter, the command would keep an instance alive while replacing others. For testing purposes, you specify to replace all immediately for speed. In production, leaving a buffer would allow the website to continue serving the website while updating.

Click **Check my progress** to verify the objective.

Update the website

Check my progress

Assessment completed!

2. Wait three minutes after issuing the `rolling-action replace` command in order to give the instances time to be processed, and then check the status of the managed instance group. Run the following to confirm the service is listed as **HEALTHY**:

100/100

Contents

Host a Web App on Google Cloud Using Compute E

Lab setup instructions and requirements

End Lab 00:41:32

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
student-02-953d929d59b2(

Password
L3fZEAou87Gv

Project ID
qwiklabs-gcp-04-d8c544a

```
exit
```

6. Monitor the repair operations:

```
watch -n 2 gcloud compute operations list \
--filter='operationType~compute.instances.repair.*'
```

This process takes several minutes to complete.

Look for the following example output.

Output:

```
NAME: repair-1755080598062-63c3c8b99843b-eed8dabc-f1833ea3
TYPE: compute.instances.repair.recreateInstance
TARGET: us-east4-c/instances/fancy-fe-tn40
HTTP_STATUS: 200
STATUS: DONE
TIMESTAMP: 2025-08-13T03:23:18.062-07:00
```

100/100

Dashboard – qwiklabs-gcp-04-d8 | VM instances – Compute Engine – qw

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-d8c544aadabf&pli=1&cloudshell=true

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Terminal (qwiklabs-gcp-04-d8c544aadabf) (qwiklabs-gcp-04-d8c544aadabf) | Open Editor

Gemini CLI is available in Cloud Shell terminal! Type `gemini` to try it. Learn more | Don't show again | Dismiss

```
Every 2.0s: gcloud compute operations list --filter=operationType~compute.instances.repair.*          cs-815608469588-default: Tue Nov 25 13:59:06 2025

NAME: repair-1764077185726-6446b3a02f869-e06abaae-a859b9ff
TYPE: compute.instances.repair.recreateInstance
TARGET: us-west1-b/instances/fancy-fe-c2f1
HTTP_STATUS: 200
STATUS: DONE
TIMESTAMP: 2025-11-25T05:26:25.726-08:00

NAME: repair-1764077211807-6446b3b90ed31-e8b8d886-13299003
TYPE: compute.instances.repair.recreateInstance
TARGET: us-west1-b/instances/fancy-be-pw50
HTTP_STATUS: 200
STATUS: DONE
TIMESTAMP: 2025-11-25T05:26:51.807-08:00

NAME: repair-1764077766841-6446b5ca6138a-55c6cfdb-9ff8d34d
TYPE: compute.instances.repair.recreateInstance
TARGET: us-west1-b/instances/fancy-be-pw50
HTTP_STATUS: 200
STATUS: DONE
TIMESTAMP: 2025-11-25T05:36:06.841-08:00

NAME: repair-1764078174836-6446b74f798ad-2b66e746-0c37f4ef
TYPE: compute.instances.repair.recreateInstance
TARGET: us-west1-b/instances/fancy-fe-dz1p
HTTP_STATUS: 200
STATUS: DONE
TIMESTAMP: 2025-11-25T05:42:54.836-08:00

NAME: repair-1764078336246-6446b7e96848c-45dcb0cc-10e25e23
TYPE: compute.instances.repair.recreateInstance
TARGET: us-west1-b/instances/fancy-be-pw50
HTTP_STATUS: 200
```

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Dashboard – qwiklabs-gcp-04-d | VM instances – Compute En | fancy-be-nrzc – Compute Engine | fancy-be-pw50 – Compute Engi | fancy-fe-bfzx – Compute Engine | fancy-fe-bhht – Compute Engine

https://console.cloud.google.com/compute/instances?project=qwiklabs-gcp-04-d8c544aadabf

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VM instances

Create instance | Import VM | Refresh | Learn

Instances | Observability | Instance schedules

VM instances

Filter: Enter property name or value

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
✓	fancy-be-nrzc	us-west1-b		fancy-be-mig	10.138.0.6 (nic0)	35.247.65.23 (nic0)	SSH
✓	fancy-be-pw50	us-west1-b		fancy-be-mig	10.138.0.7 (nic0)	34.11.230.59 (nic0)	SSH
✓	fancy-fe-bfzx	us-west1-b		fancy-fe-mig	10.138.0.13 (nic0)	34.187.247.63 (nic0)	SSH
✓	fancy-fe-bhht	us-west1-b		fancy-fe-mig	10.138.0.14 (nic0)	136.117.23.18 (nic0)	SSH
○	frontend	us-west1-b			10.138.0.3 (nic0)		SSH

Related actions

Show

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Compute Engine

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fancy-be-nrzc

Edit | Reset | Create machine image | Create similar | Start / Resume | Equivalent code

Details | Observability | OS Info | Screenshot

Basic information

Name	fancy-be-nrzc
Instance Id	2865163898737660811
Description	None
Type	Instance
Status	Running
Creation time	Nov 25, 2025, 6:51:40 PM UTC+05:30
Location	us-west1-b
Boot disk source image	debian-12-bookworm-v20251111
Boot disk architecture	X86_64
Boot disk license type	Free
Instance template	fancy-be
In use by	fancy-be-mig
Physical host	None
Maintenance status	–
Labels	None
Tags	–

Equivalent code

Dashboard – qwiklabs-gcp-04-d | VM instances – Compute Engine | fancy-be-nrzc – Compute Engine | fancy-be-pw50 – Compute | fancy-fe-bfzx – Compute Engine | fancy-fe-bhht – Compute Engine

https://console.cloud.google.com/compute/instancesDetail/zones/us-west1-b/instances/fancy-be-pw50?project=qwiklabs-gcp-04-d8c544aadabf

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Google Cloud | qwiklabs-gcp-04-d8c544aadabf | Search (/) for resources, docs, products, and more | Search

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fancy-be-pw50 | Edit | Reset | Create machine image | Create similar | Start / Resume | Equivalent code

Details | Observability | OS Info

Basic information

Name	fancy-be-pw50
Instance Id	9107936573286519691
Description	None
Type	Instance
Status	Running
Creation time	Nov 25, 2025, 6:51:40 PM UTC+05:30
Location	us-west1-b
Boot disk source image	debian-12-bookworm-v20251111
Boot disk architecture	X86_64
Boot disk license type	Free
Instance template	fancy-be
In use by	fancy-be-mig
Physical host	None
Maintenance status	–
Labels	None
Tags	–

Equivalent code

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fancy-fe-bfzx

Edit | Reset | Create machine image | Create similar | Start / Resume | Equivalent code

Details | Observability | OS Info

Basic information

Name	fancy-fe-bfzx
Instance Id	4050793679542553716
Description	None
Type	Instance
Status	Running
Creation time	Nov 25, 2025, 7:13:55 PM UTC+05:30
Location	us-west1-b
Boot disk source image	debian-12-bookworm-v20251111
Boot disk architecture	X86_64
Boot disk license type	Free
Instance template	fancy-fe-new
In use by	fancy-fe-mig
Physical host	None
Maintenance status	–
Labels	None
Tags	–

Equivalent code

Compute Engine

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fancy-fe-bhht

Edit | Reset | Create machine image | Create similar | Start / Resume | Equivalent code

Details | Observability | OS Info

Basic information

Name	fancy-fe-bhht
Instance Id	8164131545943641514
Description	None
Type	Instance
Status	Running
Creation time	Nov 25, 2025, 7:16:45 PM UTC+05:30
Location	us-west1-b
Boot disk source image	debian-12-bookworm-v20251111
Boot disk architecture	X86_64
Boot disk license type	Free
Instance template	fancy-fe-new
In use by	fancy-fe-mig
Physical host	None
Maintenance status	–
Labels	None
Tags	–

Equivalent code

Dashboard – qwiklabs-gcp-04-d | VM instances – Compute Engine | fancy-be-nrzc – Compute E | fancy-be-pw50 – Compute Engi | fancy-fe-bfzx – Compute Engine | fancy-fe-bhht – Compute Engine

https://console.cloud.google.com/compute/instancesDetail/zones/us-west1-b/instances/fancy-be-nrzc?project=qwiklabs-gcp-04-d8c544aadabf&...

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fancy-be-nrzc | Edit | Reset | Create machine image | Create similar | Start / Resume | Equivalent code

Details | Observability | OS Info | Screenshot

Install Ops Agent

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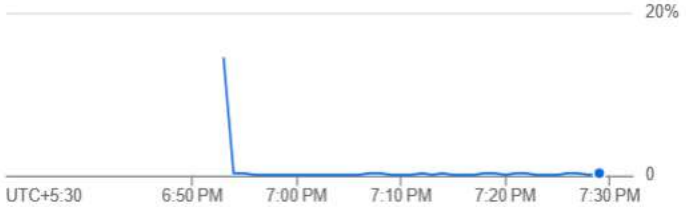
  - Packet Mirroring
- Disk
  - Performance
  - Capacity

Monitor VM Instances

Predefined | Annotations (4) | Last 1 hour | Recommended Alerts

CPU Utilization

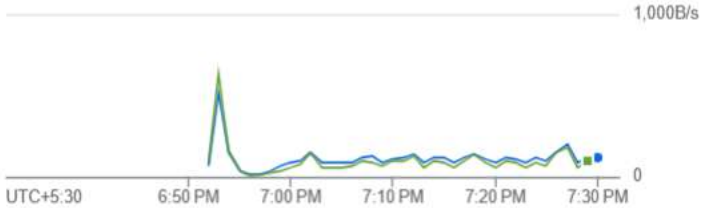


Memory Utilization

Requires Ops Agent | INSTALL

0 time series

Network Traffic



Disk Space Utilization

Requires Ops Agent | INSTALL

0 time series

16°C Clear | Search | ENG IN | 07:32 PM 25-11-2025

Dashboard – qwiklabs-gcp-04-d | VM instances – Compute Engine | fancy-be-nrzc – Compute Engine | fancy-be-pw50 – Compute | fancy-fe-bfzx – Compute Engine | fancy-fe-bhht – Compute Engine

https://console.cloud.google.com/compute/instancesDetail/zones/us-west1-b/instances/fancy-be-pw50?project=qwiklabs-gcp-04-d8c544aadabf...

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fancy-be-pw50 | Edit | Reset | Create machine image | Create similar | Start / Resume | Equivalent code

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Monitor VM Instances

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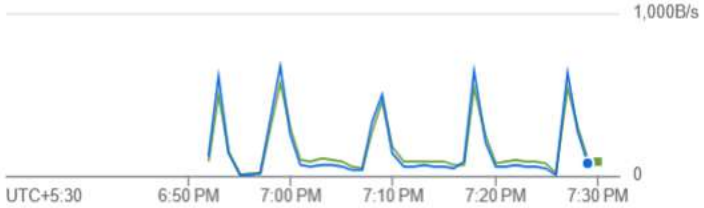
CPU Utilization

Memory Utilization

Requires Ops Agent | INSTALL

0 time series

Network Traffic



Disk Space Utilization

Requires Ops Agent | INSTALL

0 time series

16°C Clear | Search | ENG IN | 07:37 PM 25-11-2025

Dashboard – qwiklabs-gcp-04-d | VM instances – Compute Engine | fancy-be-nrzc – Compute Engine | fancy-be-pw50 – Compute Engine | fancy-fe-bfzx – Compute En | fancy-fe-bhht – Compute Engine

https://console.cloud.google.com/compute/instancesDetail/zones/us-west1-b/instances/fancy-fe-bfzx?project=qwiklabs-gcp-04-d8c544aadabf&t...

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- Marketplace
- Release Notes

fancy-fe-bfzx | Edit | Reset | Create machine image | Create similar | Start / Resume | Equivalent code

Details | Observability | OS Info

VM Stopped

Metrics
Logs

- Overview
- CPU
- Processes
- Memory
- Network
  - Summary
  - Packet Mirroring
- Disk
  - Performance
  - Capacity

Monitor VM Instances

Predefined | Annotations (4)

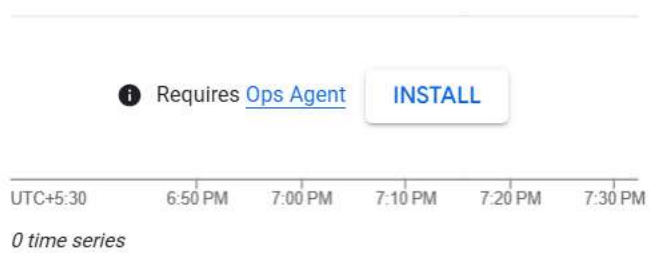
Annotations

Select from a list of system event types to annotate on your charts. This lets you correlate specific events with observed performance trends.

CPU Utilization

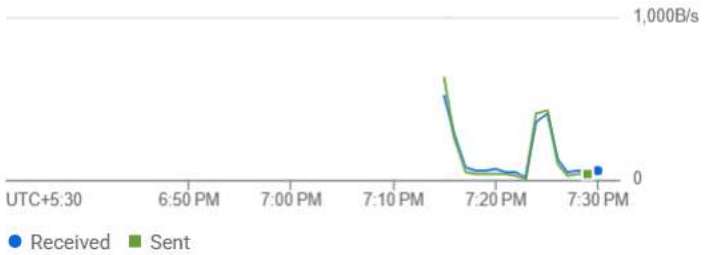
Memory Utilization

Requires Ops Agent | INSTALL



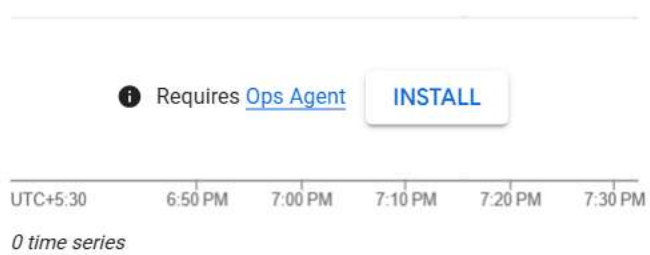
0 time series

Network Traffic



Disk Space Utilization

Requires Ops Agent | INSTALL



0 time series

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Dashboard – qwiklabs-gcp-04-d | VM instances – Compute Engine | fancy-be-nrzc – Compute Engine | fancy-be-pw50 – Compute Engine | fancy-fe-bfzx – Compute Engine | fancy-fe-bhht – Compute Engine

https://console.cloud.google.com/compute/instancesDetail/zones/us-west1-b/instances/fancy-fe-bhht?project=qwiklabs-gcp-04-d8c544aadabf&...

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

Google Cloud | qwiklabs-gcp-04-d8c544aadabf | Search (/) for resources, docs, products, and more | Search

Compute Engine

- Overview
- Security risk overview

Virtual machines
- VM instances
- Instance templates
- Sole-tenant nodes
- Machine images
- TPUs
- Committed use discou...
- Reservations
- Migrate to Virtual Mach...

Storage
- Disks

- Marketplace
- Release Notes

fancy-fe-bhht | Edit | Reset | Create machine image | Create similar | Start / Resume | Equivalent code

Details | Observability | OS Info

Install Ops Agent

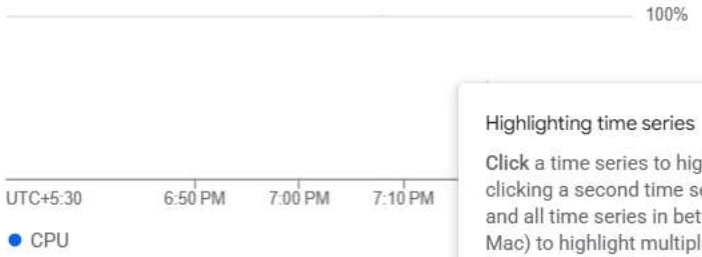
Metrics
Logs

- Overview
- CPU
- Processes
- Memory
- Network
  - Summary
  - Packet Mirroring
- Disk
  - Performance
  - Capacity

Monitor VM Instances

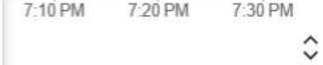
Predefined | Annotations (4) | Last 1 hour | Recommended Alerts

CPU Utilization

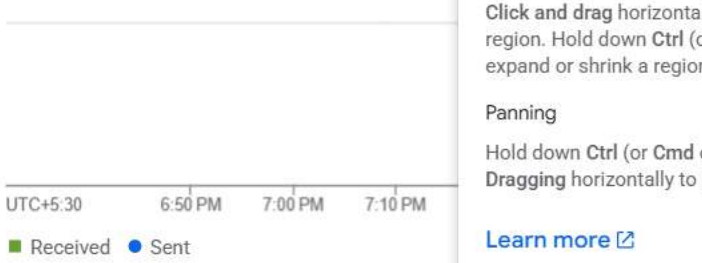


Memory Utilization

INSTALL



Network Traffic



INSTALL

Highlighting time series

Click a time series to highlight it. Hold down **Shift** while clicking a second time series to highlight both time series and all time series in between. Hold down **Ctrl** (or **Cmd** on Mac) to highlight multiple specific time series. **Click** the background of the chart to deselect all time series.

Changing the resolution

Click and drag horizontally or vertically to expand a specific region. Hold down **Ctrl** (or **Cmd** on Mac) while scrolling to expand or shrink a region.

Panning

Hold down **Ctrl** (or **Cmd** on Mac) while **Clicking and Dragging** horizontally to pan left or right.

Learn more

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