Create and Run ML Pipelines with Vertex Pipelines

Vertex AI Pipelines (formerly Kubeflow Pipelines on GCP) orchestrate scalable ML workflows using Python SDK. Lab builds pipelines processing text input through 3-step intro workflow and full AutoML classification lifecycle.

- **Core Objectives**
  - Use Kubeflow Pipelines SDK (`kfp.dsl.pipeline`) to define reusable components and orchestrate steps.
  - Leverage `google_cloud_pipeline_components` library for native Vertex AI integration (training, evaluation, deployment).

- **Pipeline Types**
  - Intro Pipeline: 3-step text processing workflow demonstrating SDK basics and component chaining.
  - AutoML Pipeline: Trains classification model, evaluates performance, deploys endpoint automatically.

- **Advanced Features**
  - Pre-built components handle Vertex AI services without custom containers.
  - Cloud Scheduler automates recurring pipeline executions on cron schedule.

Note: - Task-5 options are deprecated in the GCP lab, so perform the tasks as shown in the images carefully.
- Do not leave any Tasks even though the score count is not available, at the end of the lab the marks are credited after completing the tasks.

Dashboard
Catalog
Paths
Collections

Lab setup instructions and requirements

End Lab

05:14:32
Time limit

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-02-9a4bf3189b9e6

Password
63du0wcZQmsg

GCP Project ID
qwiklabs-gcp-02-48e62cdl

Activate Cloud Shell

Cloud Shell is a virtual machine that contains development tools. It offers a persistent 5-GB home directory and runs on Google Cloud. Cloud Shell provides command-line access to your Google Cloud resources. `gcloud` is the command-line tool for Google Cloud. It comes pre-installed on Cloud Shell and supports tab completion.

1. Click the **Activate Cloud Shell** button ( ) at the top right of the console.
2. Click **Continue**.
   It takes a few moments to provision and connect to the environment. When you are connected, you are also authenticated, and the project is set to your *PROJECT_ID*.

Sample commands

- List the active account name:

```
gcloud auth list
```

(Output)

```
Credentialed accounts:
```

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

Dashboard
Catalog
Paths
Collections

Lab setup instructions and requirements

End Lab
05:13:56
Time limit

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-02-9a4bf3189b9e

Password
63du0wcZQmsg

GCP Project ID
qwiklabs-gcp-02-48e62cdl

```
gcloud auth list
```

(Output)

```
Credentialed accounts:
 - <myaccount>@<mydomain>.com (active)
```

(Example output)

```
Credentialed accounts:
 - google1623327_student@qwiklabs.net
```

- List the project ID:

```
gcloud config list project
```

(Output)

```
[core]
```

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

Dashboard – qwiklabs-gcp-02-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-02-48e62cdbdd96&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

Dashboard | Activity | Recommendations | Customize

CLOUD SHELL
Terminal (qwiklabs-gcp-02-48e62cdbdd96) | 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-02-48e62cdbdd96.
Use `gcloud config set project [PROJECT_ID]` to change to a different project.
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$ gcloud auth list
Credentialed Accounts

ACTIVE: *
ACCOUNT: student-02-9a4bf3189b9e@qwiklabs.net

To set the active account, run:
    $ gcloud config set account `ACCOUNT`

student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$ gcloud config list project
[core]
project = qwiklabs-gcp-02-48e62cdbdd96

Your active configuration is: [cloudshell-4770]
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$
```

23°C Sunny | Search | ENG IN | 03:00 PM 17-12-2025

Dashboard
Catalog
Paths
Collections

Lab setup instructions and requirements

End Lab
05:10:15
Time limit

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-02-9a4bf3189b9e

Password
63du0wcZQmsg

GCP Project ID
qwiklabs-gcp-02-48e62cdl

Task 1. Cloud environment setup

Cloud Shell has a few environment variables, including GOOGLE_CLOUD_PROJECT which contains the name of our current Cloud project. We use this in various places throughout this lab. You can see it by running:

```
echo $GOOGLE_CLOUD_PROJECT
```

Enable APIs

- In later steps you see where these services are needed (and why), but to begin, run this command to give your project access to the Compute Engine, Container Registry, and Vertex AI services:

```
gcloud services enable compute.googleapis.com          \
                       containerregistry.googleapis.com  \
                       aiplatform.googleapis.com  \
                       cloudbuild.googleapis.com \
                       cloudfunctions.googleapis.com
```

This should produce a successful message similar to this one:

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

Dashboard
Catalog
Paths
Collections

Lab setup instructions and requirements

End Lab
05:09:24
Time limit

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-02-9a4bf3189b9e6

Password
63du0wcZQmsg

GCP Project ID
qwiklabs-gcp-02-48e62cdl

Enable APIs

- In later steps you see where these services are needed (and why), but to begin, run this command to give your project access to the Compute Engine, Container Registry, and Vertex AI services:

```
gcloud services enable compute.googleapis.com          \
                       containerregistry.googleapis.com  \
                       aiplatform.googleapis.com  \
                       cloudbuild.googleapis.com \
                       cloudfunctions.googleapis.com
```

This should produce a successful message similar to this one:

```
Operation "operations/acf.cc11852d-40af-47ad-9d59-477a12847c9e" finished
successfully.
```

Task 2. Create a Cloud Storage bucket

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

Dashboard – qwiklabs-gcp-02-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-02-48e62cdbdd96&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-02-48e62cdbdd96)

Open Editor

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

Don't show again Dismiss

```
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$ echo $GOOGLE_CLOUD_PROJECT
qwiklabs-gcp-02-48e62cdbdd96
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$ gcloud services enable compute.googleapis.com          \
                     containerregistry.googleapis.com  \
                     aiplatform.googleapis.com  \
                     cloudbuild.googleapis.com \
                     cloudfunctions.googleapis.com
Operation "operations/acf.p2-1004761692446-e0628128-ba0d-4385-b7a6-51b58982825c" finished successfully.
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$
```

23°C Sunny | Search | ENG IN | 03:01 PM 17-12-2025

Dashboard
Catalog
Paths
Collections

Lab setup instructions and requirements

End Lab
05:08:57
Time limit

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-02-9a4bf3189b9e

Password
63du0wcZQmsg

GCP Project ID
qwiklabs-gcp-02-48e62cdl

Task 2. Create a Cloud Storage bucket

To run a training job on Vertex AI, you need a storage bucket in which to store your saved model assets. The bucket must be regional. These instructions specify US-central, but you can use another region (just replace it throughout this lab).

1. To create a bucket, in the Cloud Shell terminal, run the following command:

```
BUCKET_NAME=gs://$GOOGLE_CLOUD_PROJECT-bucket
gsutil mb -l us-central1 $BUCKET_NAME
```

2. Grant access to this bucket to your compute service account:

```
gcloud projects describe $GOOGLE_CLOUD_PROJECT > project-info.txt
PROJECT_NUM=$(cat project-info.txt | sed -nre
's:.*projectNumber\: (.*):\1:p')
SVC_ACCOUNT="${PROJECT_NUM//\'/}-
compute@developer.gserviceaccount.com"
gcloud projects add-iam-policy-binding $GOOGLE_CLOUD_PROJECT --
member serviceAccount:$SVC_ACCOUNT --role
roles/storage.objectAdmin
```

This ensures that Vertex Pipelines has the necessary permissions to write files to this

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

saved model assets. The bucket must be regional. These instructions specify US-central, but you can use another region (just replace it throughout this lab).

1. To create a bucket, in the Cloud Shell terminal, run the following command:

```
BUCKET_NAME=gs://$GOOGLE_CLOUD_PROJECT-bucket
gsutil mb -l us-central1 $BUCKET_NAME
```

2. Grant access to this bucket to your compute service account:

```
gcloud projects describe $GOOGLE_CLOUD_PROJECT > project-info.txt
PROJECT_NUM=$(cat project-info.txt | sed -nre
's:.*projectNumber\: (.*):\1:p')
SVC_ACCOUNT="${PROJECT_NUM//\'/}-
compute@developer.gserviceaccount.com"
gcloud projects add-iam-policy-binding $GOOGLE_CLOUD_PROJECT --
member serviceAccount:$SVC_ACCOUNT --role
roles/storage.objectAdmin
```

This ensures that Vertex Pipelines has the necessary permissions to write files to this bucket.

Task 3. Enable the Recommended APIs

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

Dashboard – qwiklabs-gcp-02-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-02-48e62cdbdd96&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-02-48e62cdbdd96)

Open Editor

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

Don't show again Dismiss

```
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$ BUCKET_NAME=gs://$GOOGLE_CLOUD_PROJECT-bucket
gsutil mb -l us-central1 $BUCKET_NAME
Creating gs://qwiklabs-gcp-02-48e62cdbdd96-bucket/...
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$ gcloud projects describe $GOOGLE_CLOUD_PROJECT > project-info.txt
PROJECT_NUM=$(cat project-info.txt | sed -nre 's:.*projectNumber\: (.*):\1:p')
SVC_ACCOUNT="${PROJECT_NUM//\'/}-compute@developer.gserviceaccount.com"
gcloud projects add-iam-policy-binding $GOOGLE_CLOUD_PROJECT --member serviceAccount:$SVC_ACCOUNT --role roles/storage.objectAdmin
Updated IAM policy for project [qwiklabs-gcp-02-48e62cdbdd96].
bindings:
- members:
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/appengine.appAdmin
- members:
  - serviceAccount:qwiklabs-gcp-02-48e62cdbdd96@qwiklabs-gcp-02-48e62cdbdd96.iam.gserviceaccount.com
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/bigquery.admin
- members:
  - serviceAccount:1004761692446@cloudbuild.gserviceaccount.com
  role: roles/cloudbuild.builds.builder
- members:
  - serviceAccount:service-1004761692446@gcp-sa-cloudbuild.iam.gserviceaccount.com
  role: roles/cloudbuild.serviceAgent
- members:
  - serviceAccount:service-1004761692446@gcf-admin-robot.iam.gserviceaccount.com
  role: roles/cloudfunctions.serviceAgent
- members:
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/compute.admin
```

23°C Sunny | Search | ENG IN | 03:03 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-4

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-02-48e62cdbdd96&pli=1&cloudshell=true

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-02-48e62cdbdd96) | Open Editor

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

```
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/iam.serviceAccountAdmin
- members:
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/ml.admin
- members:
  - serviceAccount:admiral@qwiklabs-services-prod.iam.gserviceaccount.com
  - serviceAccount:qwiklabs-gcp-02-48e62cdbdd96@qwiklabs-gcp-02-48e62cdbdd96.iam.gserviceaccount.com
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/owner
- members:
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/serviceusage.serviceUsageAdmin
- members:
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/source.admin
- members:
  - serviceAccount:qwiklabs-gcp-02-48e62cdbdd96@qwiklabs-gcp-02-48e62cdbdd96.iam.gserviceaccount.com
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/storage.admin
- members:
  - serviceAccount:1004761692446-compute@developer.gserviceaccount.com
  role: roles/storage.objectAdmin
- members:
  - user:student-02-9a4bf3189b9e@qwiklabs.net
  role: roles/viewer
etag: BwZGIoejfUo=
version: 1
student_02_9a4bf3189b9e@cloudshell:~ (qwiklabs-gcp-02-48e62cdbdd96)$
```

23°C Sunny | Search | ENG IN | 03:03 PM 17-12-2025

DC Infotech Internship Portal
Create and Run ML Pipelines wit
https://partner.skills.google/focuses/41026?catalog_rank=%7B"rank"%3A1%2C"num_filters"%3A0%2C"has_search"%3Atr...
Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse
Google Skills Partner
What do you want to learn today?
6058 1

Dashboard
Catalog
Paths
Collections
Lab setup instructions and requirements
End Lab
05:07:17
Time limit
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-02-9a4bf3189b9e6
Password
63du0wcZQmsg
GCP Project ID
qwiklabs-gcp-02-48e62cdl

```
member serviceAccount:$SVC_ACCOUNT --role
roles/storage.objectAdmin
```

This ensures that Vertex Pipelines has the necessary permissions to write files to this bucket.

Task 3. Enable the Recommended APIs

1. In the Google Cloud console, in the **Navigation menu** (≡), click **Vertex AI > Dashboard**.
2. Click **Enable All Recommended API**.

Task 4. Launch a Vertex AI Notebooks instance

1. In the Google Cloud Console, on the **Navigation Menu**, click **Vertex AI > Workbench**.
2. On the User-Managed Notebooks page, click **CREATE NEW**, select **TensorFlow Enterprise 2.11 (Intel® MKL-DNN/MKL)**.

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

23°C Sunny
Search
ENG IN
03:03 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | qwiklabs-gcp-02-48e... – Google

https://console.cloud.google.com/welcome?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud

-gcp-02-48e62cdbdd96

Search (/) for resources, docs, products, and more

Search

Favorite products appear here

Products

- Billing
- IAM & Admin
- Marketplace
- APIs & Services
- Vertex AI
- Compute Engine
- Kubernetes Engine
- Cloud Storage
- Security
- BigQuery
- Monitoring
- Cloud Run

View all products

- Dashboard
- Model Garden
- Vertex AI Studio New
- GenAI Evaluation New
- Tuning

Agent Builder

- Agent Garden
- Agent Engine
- RAG Engine
- Vertex AI Search
- Vector Search

Notebooks

- Colab Enterprise
- Workbench

Model development

- Feature Store
- Datasets
- Training

-02-48e62cdbdd96

Project ID: qwiklabs-gcp-02-48e62cdbdd96

ery in BigQuery

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/vertex-ai/dashboard?project=qwiklabs-gcp-02-48e62cdbd...

23°C Sunny

Search

ENG IN

03:04 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Dashboard – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/dashboard?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

Vertex AI

- Dashboard
- Model Garden
- Vertex AI Studio New
- GenAI Evaluation New
- Tuning

Agent Builder

- Agent Garden
- Agent Engine
- RAG Engine
- Vertex AI Search
- Vector Search

Notebooks

- Colab Enterprise

- Provisioned Throughput
- Pipelines
- Tutorials

Dashboard

Try Gemini 3 Pro, our next-generation model for complex, agentic workloads and advanced software engineering, now in the Vertex AI Studio.

Get started with Vertex AI

Vertex AI empowers machine learning developers, data scientists, and data engineers to take their projects from ideation to deployment, quickly and cost-effectively. Learn more about Vertex AI

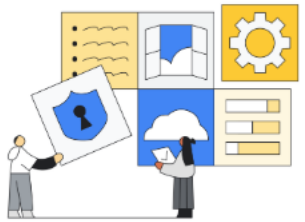
Enable all recommended APIs

Tutorials

Learn how to use generative AI, Gemini, and more on Vertex AI.

View tutorials

Show API list



23°C Sunny | Search | ENG IN | 03:05 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Dashboard – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/dashboard?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

Vertex AI

- Dashboard
- Model Garden
- Vertex AI Studio New
- GenAI Evaluation New
- Tuning

Agent Builder

- Agent Garden
- Agent Engine
- RAG Engine
- Vertex AI Search
- Vector Search

Notebooks

- Colab Enterprise

- Provisioned Throughput
- Pipelines
- Tutorials

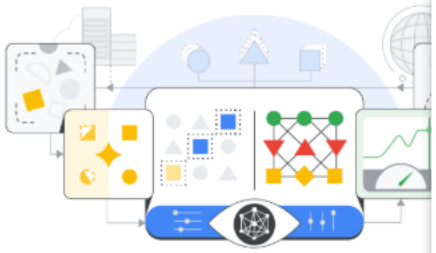
Dashboard

Try Gemini 3 Pro, our next-generation model for complex, agentic workloads and advance

Get started with Vertex AI

Vertex AI empowers machine learning developers, data scientists, and data engineers to take their projects from ideation to deployment, quickly and cost-effectively. Learn more about Vertex AI

Enable all recommended APIs



Show API list

Notifications

- Enable service: visionai.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: cloudapiregistry.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: telemetry.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: dataform.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: datalineage.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: notebooks.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: dataplex.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: compute.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: artifactregistry.googleapis.com — Just now

23°C Sunny | Search | ENG IN | 03:05 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Dashboard – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/dashboard?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

Vertex AI

- Dashboard
- Model Garden
- Vertex AI Studio New
- GenAI Evaluation New
- Tuning

Agent Builder

- Agent Garden
- Agent Engine
- RAG Engine
- Vertex AI Search
- Vector Search

Notebooks

- Colab Enterprise

- Provisioned Throughput
- Pipelines
- Tutorials

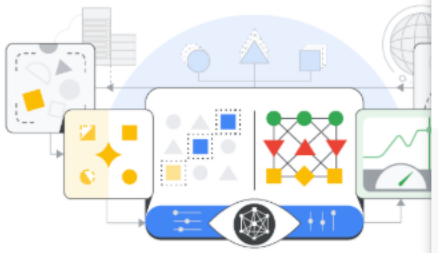
Dashboard

Try Gemini 3 Pro, our next-generation model for complex, agentic workloads and advance

Get started with Vertex AI

Vertex AI empowers machine learning developers, data scientists, and data engineers to take their projects from ideation to deployment, quickly and cost-effectively. Learn more about Vertex AI

Enable all recommended APIs



Show API list

- Enable service: datalineage.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: notebooks.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: dataplex.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: compute.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: artifactregistry.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: dataflow.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: storage-component.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now
- Enable service: aiplatform.googleapis.com qwiklabs-gcp-02-48e62cdbdd96 — Just now

See all activities

23°C Sunny | Search | ENG IN | 03:06 PM 17-12-2025

DC Infotech Internship Portal
Create and Run ML Pipelines wit
https://partner.skills.google/focuses/41026?catalog_rank=%7B"rank"%3A1%2C"num_filters"%3A0%2C"has_search"%3Atr...
Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse
Google Skills Partner
What do you want to learn today?
6058 1

Dashboard
Catalog
Paths
Collections

Lab setup instructions and requirements

End Lab

05:04:32
Time limit

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-02-9a4bf3189b9e

Password
63du0wcZQmsg

GCP Project ID
qwiklabs-gcp-02-48e62cdl

Task 4. Launch a Vertex AI Notebooks instance

1. In the Google Cloud Console, on the **Navigation Menu**, click **Vertex AI > Workbench**.
2. On the User-Managed Notebooks page, click **CREATE NEW**, select **TensorFlow Enterprise 2.11 (Intel® MKL-DNN/MKL)**.
3. In the **New notebook** instance dialog, confirm the name of the deep learning VM, if you don't want to change the region and zone, leave all settings as they are and then click **Create**. The new VM will take 2-3 minutes to start.
4. Click **Open JupyterLab**.
   A JupyterLab window will open in a new tab.
5. If you see "Build recommended" pop up, click **Build**. If you see the build failed, ignore it.

Task 5. Clone a course repo within your Vertex AI Notebooks instance

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

23°C Sunny
Search
ENG IN
03:06 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Dashboard – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/dashboard?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

Vertex AI

Dashboard

- Agent Builder
  - Agent Garden
  - Agent Engine
  - RAG Engine
  - Vertex AI Search
  - Vector Search
- Notebooks
  - Colab Enterprise
  - Workbench
- Model development
  - Feature Store
  - Datasets
  - Training
- Provisioned Throughput
- Pipelines
- Tutorials

Try Gemini 3 Pro, our next-generation model for complex, agentic workloads and advanced software engineering, now in the Vertex AI Studio.

Get started with Vertex AI

Vertex AI empowers machine learning developers, data scientists, and data engineers to take their projects from ideation to deployment, quickly and cost-effectively. Learn more about Vertex AI

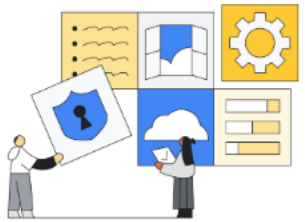
Enable all recommended APIs

Tutorials

Learn how to use generative AI, Gemini, and more on Vertex AI.

View tutorials

Show API list



https://console.cloud.google.com/vertex-ai/workbench?project=qwiklabs-gcp-02-48e62cdbdd96

23°C Sunny | Search | ENG IN | 03:06 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/workbench/user-managed?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

Vertex AI / Workbench / User-managed notebooks

Agent Builder
- Agent Garden
- Agent Engine
- RAG Engine
- Vertex AI Search
- Vector Search

Notebooks
- Colab Enterprise
- Workbench

Model development
- Feature Store
- Datasets
- Training
- Experiments

Provisioned Throughput

Pipelines

Tutorials

Workbench | Create New | Refresh | Learn

Instances | Executions | Schedules

View: Instances | User-managed Notebooks | Managed Notebooks

Vertex AI Workbench User-managed Notebooks is deprecated and support will end soon. We recommend that you migrate to Vertex AI Workbench instances. Migrate

Notebooks have JupyterLab 3 pre-installed and are configured with GPU-enabled machine learning frameworks. Learn more

Filter Enter property name or value

Notebook name	Zone	Auto upgrade	Environment	Machine Type	GPUs	Owner	Created

Note:

- During this lab User-managed Notebook was deprecated, hence ‘Create New’ option was not working
- Follow the below steps shown in the images very carefully, and if some options do not match as shown in the images:
  - Refresh the tab ,or
  - Start the lab again.

23°C Sunny | Search | ENG IN | 03:07 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/workbench/instances?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

Vertex AI / Workbench / Instances

Agent Builder
- Agent Garden
- Agent Engine
- RAG Engine
- Vertex AI Search
- Vector Search

Notebooks
- Colab Enterprise
- Workbench

Model development
- Feature Store
- Datasets
- Training
- Experiments

Provisioned Throughput

Pipelines

Tutorials

Workbench | Create New | Refresh | Learn

Instances | Executions | Schedules

View: Instances | User-managed Notebooks | Managed Notebooks

JupyterLab 4 is now generally available in Vertex AI Workbench. Dismiss

Workbench Instances have JupyterLab 4 pre-installed and are configured with GPU-enabled machine learning frameworks. Learn more

Filter Enter property name or value

Instance name	Zone	Auto upgrade	Version	Machine Type	GPUs	Owner	Created	Labels

Note:

- During this lab User-managed Notebook was deprecated.
- Instead 'Instances' was used to perform the lab.
- Follow the below steps shown in the images very carefully, and if some options do not match as shown in the images:
  - Refresh the tab ,or
  - Start the lab again.

23°C Sunny | Search | ENG IN | 03:08 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/workbench/instances?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more

Vertex AI / Workbench / Instances

Agent Builder
- Agent Garden
- Agent Engine
- RAG Engine
- Vertex AI Search
- Vector Search

Notebooks
- Colab Enterprise
- Workbench

Model development
- Feature Store
- Datasets
- Training
- Experiments

Provisioned Throughput
Pipelines
Tutorials

Workbench | Create New | Refresh

Instances | Executions | Schedules

View: Instances | User-managed Notebooks | Managed Notebooks

JupyterLab 4 is now generally available in Vertex AI Workbench.

Workbench Instances have JupyterLab 4 pre-installed and are configured with GPU-enabled machine learning frameworks. Learn more

Filter | Enter property name or value

Instance name	Zone	Auto upgrade	Version

New instance

Name *
instance-20251217-150931

Must start with a letter followed by up to 47 lowercase letters, numbers, or hyphens (-) and cannot end with a hyphen

Region *: us-central1 (Iowa)

Zone *: us-central1-a

Some regions are restricted due to a policy set by your organization. Learn more

- [ ] Attach 1 NVIDIA T4 GPU
- [x] Enable Apache Spark and BigQuery Kernels

- (•) Network in this project
- ( ) Shared network

Network: default

Subnetwork *: default(10.128.0.0/20)

Instance properties

Machine type	e2-standard-4
Data disk	100 GB Balanced persistent disk
Permission	Compute Engine default service account
JupyterLab version	JupyterLab 4

22°C Sunny | Search | ENG IN | 03:10 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/workbench/instances?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more

Vertex AI / Workbench / Instances

- Agent Builder
  - Agent Garden
  - Agent Engine
  - RAG Engine
  - Vertex AI Search
  - Vector Search
- Notebooks
  - Colab Enterprise
  - Workbench
- Model development
  - Feature Store
  - Datasets
  - Training
  - Experiments
- Provisioned Throughput
- Pipelines
- Tutorials

Workbench | Create New | Refresh

Instances | Executions | Schedules

View: Instances | User-managed Notebooks | Managed Notebooks

JupyterLab 4 is now generally available in Vertex AI Workbench.

Workbench Instances have JupyterLab 4 pre-installed and are configured with GPU-enabled machine learning frameworks. Learn more

Filter Enter property name or value

Instance name	Zone	Auto upgrade	Version

Must start with a letter followed by up to 47 lowercase letters, numbers, or hyphens (-) and cannot end with a hyphen

Region * us-central1 (Iowa)

Zone * us-central1-a

Some regions are restricted due to a policy set by your organization. Learn more

- [ ] Attach 1 NVIDIA T4 GPU
- [x] Enable Apache Spark and BigQuery Kernels

- (•) Network in this project
- ( ) Shared network

Network default

Subnetwork * default(10.128.0.0/20)

Instance properties

Machine type	e2-standard-4
Data disk	100 GB Balanced persistent disk
Permission	Compute Engine default service account
JupyterLab version	JupyterLab 4
Estimated cost	$145.20 monthly, $0.20 hourly

Advanced options | Cancel | Create

Trending videos The Hunger Ga... | Search | ENG IN | 03:11 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklab

https://console.cloud.google.com/vertex-ai/workbench/instances?project=qwiklabs-gcp-02-48e62cdbdd96

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

Google Cloud | qwiklabs-gcp-02-48e62cdbdd96 | Search (/) for resources, docs, products, and more | Search

Vertex AI / Workbench / Instances

- Workbench
- Model development
  - Feature Store
  - Datasets
  - Training
  - Experiments
  - Metadata
  - Ray on Vertex AI
- Deploy and use
  - Model Registry
  - Endpoints
  - Batch Inference
  - Monitoring
- Provisioned Throughput
- Pipelines
- Tutorials

Workbench

Create New | Refresh | Learn

Instances | Executions | Schedules

View: Instances | User-managed Notebooks | Managed Notebooks

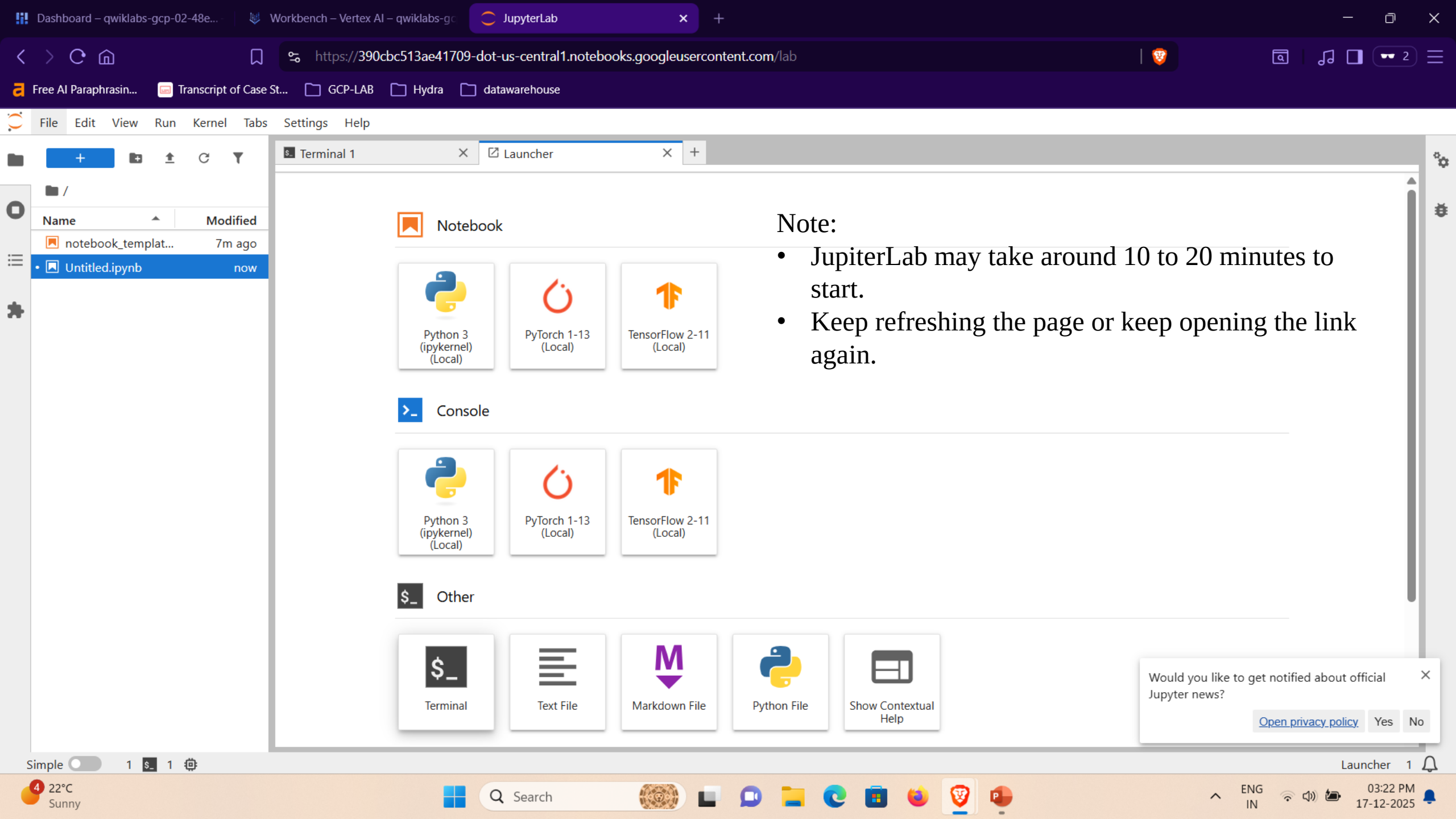
JupyterLab 4 is now generally available in Vertex AI Workbench. Dismiss

Workbench Instances have JupyterLab 4 pre-installed and are configured with GPU-enabled machine learning frameworks. Learn more

Filter Enter property name or value

Instance name		Zone	Auto upgrade	Version	Machine Type	GPUs	Owner	Cr
instance-20251217-151114	Open JupyterLab	us-central1-a	—	M137	Efficient Instance: 4 vCPUs, 16 GB RAM	None	1004761692446-compute@developer.gserviceaccount.com	De 20 3:1

22°C Sunny | Search | ENG IN | 03:16 PM 17-12-2025



Note:

- JupiterLab may take around 10 to 20 minutes to start.
- Keep refreshing the page or keep opening the link again.

DC Infotech Internship Portal
Create and Run ML Pipelines wit
https://partner.skills.google/focuses/41026?catalog_rank=%7B"rank"%3A1%2C"num_filters"%3A0%2C"has_search"%3Atr...
Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse
Google Skills Partner
What do you want to learn today?
6058 1

Dashboard
Catalog
Paths
Collections

Lab setup instructions and requirements

End Lab

05:00:21
Time limit

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-02-9a4bf3189b9e6

Password
63du0wcZQmsg

GCP Project ID
qwiklabs-gcp-02-48e62cdl

Task 5. Clone a course repo within your Vertex AI Notebooks instance

To clone the training-data-analyst notebook in your JupyterLab instance:

1. In JupyterLab, to open a new terminal, click the **Terminal** icon.
2. At the command-line prompt, run the following command:

```
git clone https://github.com/GoogleCloudPlatform/training-data-analyst
```

3. To confirm that you have cloned the repository, double-click on the training-data-analyst directory and ensure that you can see its contents.
   The files for all the Jupyter notebook-based labs throughout this course are available in this directory.

Task 6. Create and Run ML Pipelines with Vertex Pipelines

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

22°C Sunny
Search
ENG IN
03:10 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklabs-gc | lab - JupyterLab

https://390cbc513ae41709-dot-us-central1.notebooks.googleusercontent.com/lab

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

File Edit View Run Kernel Tabs Settings Help

/

Name	Modified
training-data-anal...	10s ago
notebook_templat...	10m ago
Untitled.ipynb	1m ago

Terminal 1 | Launcher

```
(base) jupyter@instance-20251217-151114:~$ git clone https://github.com/GoogleCloudPlatform/training-data-analys
t
Cloning into 'training-data-analyst'...
remote: Enumerating objects: 68305, done.
remote: Counting objects: 100% (10/10), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 68305 (delta 4), reused 3 (delta 3), pack-reused 68295 (from 3)
Receiving objects: 100% (68305/68305), 706.02 MiB | 29.37 MiB/s, done.
Resolving deltas: 100% (43951/43951), done.
Updating files: 100% (12917/12917), done.
(base) jupyter@instance-20251217-151114:~$
(base) jupyter@instance-20251217-151114:~$ ls
Untitled.ipynb  notebook_template.ipynb  training-data-analyst
(base) jupyter@instance-20251217-151114:~$
(base) jupyter@instance-20251217-151114:~$ cd  training-data-analyst
(base) jupyter@instance-20251217-151114:~/training-data-analyst$
(base) jupyter@instance-20251217-151114:~/training-data-analyst$ ls
CODEOWNERS       CPB100   blogs      courses  doc  learning_rate.ipynb  self-paced-labs
CONTRIBUTING.md  LICENSE  bootcamps  datalab  iot  quests
(base) jupyter@instance-20251217-151114:~/training-data-analyst$
```

Simple 1 1 Terminal 1 1

22°C Sunny | Search | ENG IN | 03:25 PM 17-12-2025

DC Infotech Internship Portal
Create and Run ML Pipelines wit
https://partner.skills.google/focuses/41026?catalog_rank=%7B"rank"%3A1%2C"num_filters"%3A0%2C"has_search"%3Atr...
Free AI Paraphrasin... Transcript of Case St... GCP-LAB Hydra datawarehouse
Google Skills Partner
What do you want to learn today?
6058 1

Dashboard
Catalog
Paths
Collections

Lab setup instructions and requirements

End Lab
04:45:15
Time limit

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-02-9a4bf3189b9e6

Password
63du0wcZQmsg

GCP Project ID
qwiklabs-gcp-02-48e62cdl

Task 6. Create and Run ML Pipelines with Vertex Pipelines

1. In the notebook interface, navigate to **training-data-analyst > courses > machine_learning > deepdive2 > machine_learning_in_the_enterprise > labs**, and open **pipelines_intro_kfp.ipynb**.
2. In the notebook interface, click **Edit > Clear All Outputs**.
3. Carefully read through the notebook instructions and fill in lines marked with #TODO where you need to complete the code.

Tip: To run the current cell, click the cell and press SHIFT+ENTER. Other cell commands are listed in the notebook UI under **Run**.

- Hints may also be provided for the tasks to guide you along. Highlight the text to read the hints (they are in white text).
- If you need more help, look at the complete solution at **training-data-analyst > courses > machine_learning > deepdive2 > machine_learning_in_the_enterprise > solutions**, and open **pipelines_intro_kfp.ipynb**.

End your lab

Note:

- The lab does not have any score counting appearing.
- Even so do at least minimum of 4 #TODO tasks to complete the task-6 and get full marks once the lab is ended.

Lab instructions and tasks
Overview
Setup and requirements
Task 1. Cloud environment setup
Task 2. Create a Cloud Storage bucket
Task 3. Enable the Recommended APIs
Task 4. Launch a Vertex AI Notebooks instance
Task 5. Clone a course repo within your Vertex AI Notebooks instance
Task 6. Create and Run ML Pipelines with Vertex Pipelines
End your lab

22°C Sunny
Search
ENG IN
03:25 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklabs-gc | lab - JupyterLab

https://390cbc513ae41709-dot-us-central1.notebooks.googleusercontent.com/lab

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

File Edit View Run Kernel Tabs Settings Help

/

Name	Modified
training-data-anal...	now
notebook_templat...	10m ago
Untitled.ipynb	1m ago

Terminal 1 | Launcher

```
(base) jupyter@instance-20251217-151114:~/training-data-analyst$ cd courses
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses$
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses$ cd machine_learning
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning$
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning$
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning$ cd labs
bash: cd: labs: No such file or directory
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning$
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning$ cd deepdive2 > machine
_learning_in_the_enterprise > labs
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2$ cd machine_l
earning_in_the_enterprise > labs
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2/machine_learn
ing_in_the_enterprise$
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2/machine_learn
ing_in_the_enterprise$ cd labs
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2/machine_learn
ing_in_the_enterprise/labs$
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2/machine_learn
ing_in_the_enterprise/labs$
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2/machine_learn
ing_in_the_enterprise/labs$
```

Simple 1 1 Terminal 1 1

22°C Sunny | Search | ENG IN | 03:28 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklabs-gc | lab - JupyterLab

https://390cbc513ae41709-dot-us-central1.notebooks.googleusercontent.com/lab

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

File Edit View Run Kernel Tabs Settings Help

/

Name	Modified
training-data-anal...	now
notebook_templat...	10m ago
Untitled.ipynb	1m ago

Terminal 1 | Launcher

```
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2/machine_learn
ing_in_the_enterprise/labs$ ls
bqml-online-prediction.ipynb
build_model_experimentation_lineage_with_prebuild_code.ipynb
comparing_local_trained_models.ipynb
create_run_vertex_pipeline.ipynb
distributed-hyperparameter-tuning.ipynb
gapic-vizier-multi-objective-optimization.ipynb
intro_to_vertex_pipelines.ipynb
model_monitoring.ipynb
model_monitoring_for_custom_model_batch_prediction_job.ipynb
overfit_and_underfit.ipynb
pipelines_intro_kfp.ipynb
sdk-custom-image-classification-batch.ipynb
sdk_custom_tabular_regression_online_explain.ipynb
sdk_custom_xgboost.ipynb
taxicab_traffic
taxifare
tuning_results.png
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2/machine_learn
ing_in_the_enterprise/labs$
(base) jupyter@instance-20251217-151114:~/training-data-analyst/courses/machine_learning/deepdive2/machine_learn
ing_in_the_enterprise/labs$
```

Simple 1 1 Terminal 1 1

22°C Sunny | Search | ENG IN | 03:29 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklabs-gc | lab - JupyterLab

https://390cbc513ae41709-dot-us-central1.notebooks.googleusercontent.com/lab

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

File Edit View Run Kernel Tabs Settings Help

/

Name	Modified
training-data-anal...	now
notebook_templat...	10m ago
Untitled.ipynb	1m ago

Terminal 1 | Launcher

```
  GNU nano 5.4                                pipelines_intro_kfp.ipynb *
   "cell_type": "code",
   "execution_count": 15,
   "metadata": {
    "id": "mbpw7oyM2Ou5"
   },
   "outputs": [],
   "source": [
    "# Initialize the Vertex AI SDK for your project and bucket\n",
    "# TODO 1: from google.cloud import aiplatform

aiplatform.init(
    project=PROJECT_ID,
    location=LOCATION,
    staging_bucket=BUCKET_URI,
)
"
   ]
  },
  {
   "cell_type": "markdown",
   "metadata": {
    "id": "define_component:hello_world"

^G Help      ^O Write Out  ^W Where Is   ^K Cut       ^T Execute   ^C Location  M-U Undo
^X Exit      ^R Read File  ^\ Replace    ^U Paste     ^J Justify   ^_ Go To Line M-E Redo
```

Simple 1 1 Terminal 1 1

Top Stories Homebound in... | Search | ENG IN | 03:38 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklabs-gc | lab - JupyterLab

https://390cbc513ae41709-dot-us-central1.notebooks.googleusercontent.com/lab

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

File Edit View Run Kernel Tabs Settings Help

/

Name	Modified
training-data-anal...	now
notebook_templat...	10m ago
Untitled.ipynb	1m ago

Terminal 1 | Launcher

```
  GNU nano 5.4                                pipelines_intro_kfp.ipynb *
   },
   "outputs": [
    {
     "name": "stderr",
     "output_type": "stream",
     "text": [
      "/home/jupyter/.local/lib/python3.7/site-packages/kfp/v2/compiler/compiler.py:1293: FutureWarning: APIs i
      "  category=FutureWarning,\n"
     ]
    }
   ],
   "source": [
    "# Compile the pipeline\n",
    "from kfp.v2 import compiler  # noqa: F811\n",
    "\n",
    "compiler.Compiler().compile(# TODO 2: compiler.Compiler().compile(
    pipeline_func=pipeline,                # or your pipeline function name
    package_path="pipeline_job.json",      # or whatever the notebook specified
)
)"
   ]
  },

^G Help        ^O Write Out   ^W Where Is    ^K Cut         ^T Execute     ^C Location    M-U Undo
^X Exit        ^R Read File   ^\ Replace     ^U Paste       ^J Justify     ^_ Go To Line  M-E Redo
```

Simple 1 1 Terminal 1 1

22°C Sunny | Search | ENG IN | 03:40 PM 17-12-2025

Dashboard – qwiklabs-gcp-02-48e... | Workbench – Vertex AI – qwiklabs-gc | lab - JupyterLab

https://390cbc513ae41709-dot-us-central1.notebooks.googleusercontent.com/lab

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

File Edit View Run Kernel Tabs Settings Help

/

Name	Modified
training-data-anal...	now
notebook_templat...	10m ago
Untitled.ipynb	1m ago

Terminal 1 | Launcher

```
  GNU nano 5.4                                pipelines_intro_kfp.ipynb *
      "PipelineJob projects/192756378758/locations/us-central1/pipelineJobs/hello-world-v2-20220922141223 curre>
      "PipelineState.PIPELINE_STATE_RUNNING\n",
      "PipelineJob projects/192756378758/locations/us-central1/pipelineJobs/hello-world-v2-20220922141223 curre>
      "PipelineState.PIPELINE_STATE_RUNNING\n",
      "PipelineJob projects/192756378758/locations/us-central1/pipelineJobs/hello-world-v2-20220922141223 curre>
      "PipelineState.PIPELINE_STATE_RUNNING\n",
      "PipelineJob run completed. Resource name: projects/192756378758/locations/us-central1/pipelineJobs/hello>
     ]
    }
   ],
   "source": [
    "# Create and run the pipeline job run\n",
    "DISPLAY_NAME = \"intro_\" + TIMESTAMP\n",
    "\n",
    "job = # TODO 3: from google.cloud import aiplatform as aip  # this is typically already imported earlier

job = aip.PipelineJob(
    display_name=DISPLAY_NAME,
    template_path="pipeline_job.json",   # or the same name you used in compile()
    pipeline_root=PIPELINE_ROOT,        # usually defined earlier in the notebook
)
\n",

^G Help      ^O Write Out   ^W Where Is   ^K Cut       ^T Execute   ^C Location   M-U Undo
^X Exit      ^R Read File   ^\ Replace    ^U Paste     ^J Justify   ^_ Go To Line  M-E Redo
```

Simple 1 $_ 1

Terminal 1 1

22°C Sunny | Search | ENG IN | 03:43 PM 17-12-2025

Ready for a challenge?
Fast-track your way to a new badge
Learn more Start challenge

Lab

Migrate to Cloud SQL for PostgreSQL Using Database Migration Service

In this lab, you migrate a stand-alone PostgreSQL database (running on a virtual machine) to Cloud SQL for PostgreSQL using a continuous Databa...

1 hour

Lab

Connect an App to a Cloud SQL for PostgreSQL Instance

In this lab, you create a Kubernetes cluster and deploy a simple application to that cluster. Then, you connect the application to the supplied...

1 hour

Lab

Securing a Cloud SQL for PostgreSQL Instance

In this lab, you deploy a new Cloud SQL instance using a customer-managed encryption key (CMEK). You configure pgAudit to selectively...

35 minutes

Lab

Configure Replication and Enable Point-in-Ti Recovery for Cl

In this lab, you configure recovery for a Cloud SQL instance.

35 minutes

Lab

Create and Manage Cloud SQL

Course Badge

LAB COMPLETED

Create and Run ML Pipelines with Vertex Pipelines

Experience points

40