Cloud Spanner - Loading Data and Performing Backups

GSP1049

Google Cloud Self-Paced Labs

- Cloud Spanner supports multiple high-performance data loading methods for large-scale ingestion and database protection.
- Lab demonstrates DML, client libraries (single/batch), Dataflow bulk loading, and automated backups.

- **Loading Methods**
  - DML: Standard INSERT/UPDATE via Console/gcloud for small datasets.
  - Client Libraries: Single row inserts or batched mutations (1000+ rows/transaction) in Node.js/Python/Java.

- **Bulk & Protection**
  - Dataflow: Serverless parallel bulk load from CSV/Avro to Spanner tables.
  - Backups: Point-in-time recovery via automated/scheduled backups with 7-day retention.

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Protect your account and

End Lab 02:13:48 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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

Shell and supports tab completion.

3. (Optional) You can list the active account name with this command:

```
gcloud auth list
```

4. Click **Authorize**.

Output:

```
ACTIVE: *
ACCOUNT: student-01-ee6a49e0b325@qwiklabs.net

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

5. (Optional) You can list the project ID with this command:

```
gcloud config list project
```

Output:

0/100
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Task 5. Load data using Dataflow
Task 6. Backup your database
Congratulations!

Dashboard – qwiklabs-gcp-04-7

https://console.cloud.google.com/home/dashboard?project=qwiklabs-gcp-04-795a8314a9ec&pli=1&cloudshell=true

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
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-04-795a8314a9ec.
Use `gcloud config set project [PROJECT_ID]` to change to a different project.
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ gcloud auth list
Credentialed Accounts

ACTIVE: *
ACCOUNT: student-01-ee6a49e0b325@qwiklabs.net

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

student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ gcloud config list project
[core]
project = qwiklabs-gcp-04-795a8314a9ec

Your active configuration is: [cloudshell-12459]
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
```

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End Lab 02:11:46 Time limit

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Open Google Cloud console

Username
student-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

Task 1. Explore the instance

During deployment, a Cloud Spanner instance, database, and table were created for you.

1. From the Console, open the navigation menu (☰) > **View All Products**. Under **Databases** section, click **Spanner**.

The instance name is **banking-instance**, click on it to explore the databases. The associated database is named **banking-db**. Click on it to explore and you will see there is already a table named **Customer**. Click on it and you will be able to check the schema.

2. The table is currently empty. Navigate back to `banking-db` overview page. On the left menu, click **Spanner Studio** and then run the following:

```
SELECT * FROM Customer;
```

3. No results are returned.

0/100
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Task 6. Backup your database
Congratulations!

Instances – qwiklabs-gcp-04-795

https://console.cloud.google.com/spanner/instances?referrer=search&project=qwiklabs-gcp-04-795a8314a9ec

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Spanner | All instances

Instances

Create instance | Create free instance | View fleet health

Spanner is an always-on, globally consistent database with virtually unlimited scale. Build intelligent applications with a single database that brings together relational, graph, key-value, and search functionalities. The elimination of maintenance windows ensures uninterrupted service for mission-critical applications. Learn more

Filter Enter property name or value

Name	ID	Edition	Configuration	Processing units	Nodes	Scaling mode	Storage utilization	Labels	Tags
banking-instance	banking-instance	Standard	us-central1 (Iowa)	1,000	1	Manual allocation	0 B / 10 TB		–

https://console.cloud.google.com/spanner/instances/banking-instance/details/databases?pr...

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banking-instance – Overview – q

https://console.cloud.google.com/spanner/instances/banking-instance/details/databases?project=qwiklabs-gcp-04-795a8314a9ec

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Spanner

INSTANCE
- Overview
- Import/Export
- Backup/Restore
- Instance partitions ...

OBSERVABILITY
- System insights
- Query insights
- Lock insights
- Transaction insights
- Hotspot insights

Release Notes

All instances > Instance
banking-instance: Overview

Edit instance | Delete instance | Open in Dataplex | Learn | Hide info panel

Instance ID	banking-instance
Configuration	us-central1 (Iowa) Show details
Scaling mode	Manual allocation
Default backup schedule	Enabled

Instance summary

Statistics are updated every 3-5 minutes, which may cause some delay in actual data.

Compute capacity	CPU utilization (high)	Operations	Throughput
1000 PUs (1 node)	1.03%	Read: 0.02/s Write: —/s	Read: 0 B/s Write: —/s

Databases

Create database | Import my own data | Explore datasets | Refresh

Filter | Filter databases

Name	Dialect	CPU utilization	Size	Backup schedules	Version
banking-db	Google Standard SQL	1.03%	0 B		1 hour

banking-db

Edit or delete roles below, or select "Add principal" to grant new access. | Add principal

Show inherited roles in table
Display roles inherited from the parent resources in the table below

Filter | Enter property name or value

Role / Principal	Inheritance
Editor (2)	
Owner (3)	
Viewer (1)	

console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/.../ta...

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Spanner

DATABASE
- Overview
- Spanner Studio
- Import/Export
- Backup/Restore
- Operations
- Change streams

OBSERVABILITY
- System insights
- Query insights
- Lock insights
- Transaction insights
- Hotspot insights
- Key Visualizer

Release Notes

All instances > Instance banking-instance: Overview > Google Standard SQL Database banking-db: Overview

Write DDL | Delete database | Open in Dataplex | Hide info panel

Summary

Statistics are updated every 3-5 minutes, which may cause some delay in actual data.

CPU utilization (mean)	Operations	Throughput	Total database storage
1.04%	Read: 0.02/s Write: —/s	Read: 0 B/s Write: —/s	0 B

Tables | Views

Tables are structured with rows, columns, and values, and they contain primary keys and indexes. Parent-child relationship between tables can be defined through table interleaving or foreign keys. Learn more

Create table

Filter Filter tables

Name	Schema	Indexes	Interleaved in	Watched by	Table Size
Customer	Default	—	—		-

Show equivalent ddl

banking-db

Edit or delete roles below, or select "Add principal" to grant new access. Add principal

Show inherited roles in table
Display roles inherited from the parent resources in the table below

Filter Enter property name or value

Role / Principal	Inheritance
Editor (2)	
Owner (3)	
Viewer (1)	

banking-db – Spanner Studio – q

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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Spanner

ce
ng-instance: Overview > Google Standard SQL Database
banking-db: Spanner Studio

Open in Dataplex | Learn

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- Lock insights
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- Hotspot insights
- Key Visualizer

Release Notes

Untitled query

Open CLI | Gemini settings | View in BigQuery

Run | Save | Format | Clear | Documentation | Valid

```
1  SELECT * FROM Customer;
```

Results | Explanation

No results

The query did not return any rows.

https://console.cloud.google.com/spanner?project=qwiklabs-gcp-04-795a8314a9ec

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banking-db – Spanner Studio –

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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All instances > Instance banking-instance: Overview > Google Standard SQL Database banking-db: Spanner Studio

Open in Dataplex | Learn

Explorer

Search

- Schemas 3
  - Default
    - Tables 1
      - Customer
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      - Models 0
      - Graphs 0
    - INFORMATION_SCHEMA
    - SPANNER_SYS
- Roles 3
- Placements 1

Queries 0 Preview

Untitled query

Open CLI | Gemini settings | View in BigQuery

Run | Save | Format | Clear | Documentation | Valid

```
1  SELECT * FROM Customer;
```

Results | Explanation

No results

The query did not return any rows.

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Search

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End Lab 02:07:27 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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

Task 2. Insert data with DML

The easiest way to insert data into Spanner is via DML. Using the cloud shell and **gcloud** you can run any DML statement, including **INSERT**.

1. In Cloud Shell, run the following command:

```
gcloud spanner databases execute-sql banking-db --
instance=banking-instance \
 --sql="INSERT INTO Customer (CustomerId, Name, Location) VALUES
('bdaaaa97-1b4b-4e58-b4ad-84030de92235', 'Richard Nelson', 'Ada
Ohio')"
```

2. Return to the Console, on the left menu click **Overview**. Navigate to the **Customer** table and select **Data**, you will see the row you just inserted.

As mentioned before, you can use **gcloud** to run any DML command. Check the documentation for DML and Spanner.

Of course, loading a database row by row is not very efficient.

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Congratulations!

banking-db – Spanner Studio – q

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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CLOUD SHELL
Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
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-04-795a8314a9ec.
Use `gcloud config set project [PROJECT_ID]` to change to a different project.
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ gcloud spanner databases execute-sql banking-db --instance=banking-instance \
 --sql="INSERT INTO Customer (CustomerId, Name, Location) VALUES ('bdaaaa97-1b4b-4e58-b4ad-84030de92235', 'Richard Nelson', 'Ada Ohio')"
Statement modified 1 row
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
```

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banking-db – Spanner Studio –

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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All instances > Instance: banking-instance: Overview > Google Standard SQL Database: banking-db: Spanner Studio

Open in Dataplex | Learn

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      - Views 0
      - Models 0

Untitled query | Untitled query | Open CLI | Gemini settings | View in BigQuery

Run | Save | Format | Clear | Documentation | Valid

```
1  SELECT * FROM Customer;
```

Results | Explanation | Export

CustomerId	Name	Location
"bdaaaa97-1b4b-4e58-b4ad-84030de92235"	"Richard Nelson"	"Ada Ohio"

Rows per page: 30 | 1 – 1 of 1

CLOUD SHELL

Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
 --sql="INSERT INTO Customer (CustomerId, Name, Location) VALUES ('bdaaaa97-1b4b-4e58-b4ad-84030de92235', 'Richard Nelson',
'Ada Ohio')"
Statement modified 1 row
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
```

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Open Google Cloud console

Username
student-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

Task 3. Insert data through a client library

The optimal way to access Spanner is via a programmatic interface. There are a wide variety of client libraries including **C++, C#, Go, Java, Node.js, PHP, Python and Ruby**.

1. In the Cloud Shell enter the following command to invoke the **Nano** text editor and create a new empty configuration file named **insert.py**.

```
nano insert.py
```

2. Paste the code block listed below.

```
from google.cloud import spanner
from google.cloud.spanner_v1 import param_types

INSTANCE_ID = "banking-instance"
DATABASE_ID = "banking-db"

spanner_client = spanner.Client()
instance = spanner_client.instance(INSTANCE_ID)
database = instance.database(DATABASE_ID)
```

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Open Google Cloud console

Username
student-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

variety of client libraries including **C++, C#, Go, Java, Node.js, PHP, Python and Ruby**.

1. In the Cloud Shell enter the following command to invoke the **Nano** text editor and create a new empty configuration file named **insert.py**.

```
nano insert.py
```

2. Paste the code block listed below.

```
from google.cloud import spanner
from google.cloud.spanner_v1 import param_types

INSTANCE_ID = "banking-instance"
DATABASE_ID = "banking-db"

spanner_client = spanner.Client()
instance = spanner_client.instance(INSTANCE_ID)
database = instance.database(DATABASE_ID)

def insert_customer(transaction):
    row_ct = transaction.execute_update(
        "INSERT INTO Customer (CustomerId, Name, Location)"
        "VALUES ('b2b4002d-7813-4551-b83b-366ef95f9273', 'Shana
```

0/100
Overview
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Open Google Cloud console

Username
student-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831(

```
def insert_customer(transaction):
    row_ct = transaction.execute_update(
        "INSERT INTO Customer (CustomerId, Name, Location)"
        "VALUES ('b2b4002d-7813-4551-b83b-366ef95f9273', 'Shana
Underwood', 'Ely Iowa')"
    )
    print("{} record(s) inserted.".format(row_ct))

database.run_in_transaction(insert_customer)
```

3. Press **Ctrl+X** to exit Nano, **Y** to confirm the update, and press **Enter** to save your changes.

4. Run the python code.

```
python3 insert.py
```

5. Refresh the Cloud Console, or click on a different item on the left menu and then click again on **Data** and you will see the new row in your database.

Like with **gcloud**, you can run any DML statement from the client libraries. You can find multiple examples for all the different languages in the documentation.

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Protect your account and

End Lab 02:04:07 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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

```
        VALUES ('b2b4002d-7813-4551-b83b-366ef95f9273', 'Shana
Underwood', 'Ely Iowa')"
    )
    print("{} record(s) inserted.".format(row_ct))

database.run_in_transaction(insert_customer)
```

3. Press **Ctrl+X** to exit Nano, **Y** to confirm the update, and press **Enter** to save your changes.

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python3 insert.py
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5. Refresh the Cloud Console, or click on a different item on the left menu and then click again on **Data** and you will see the new row in your database.

Like with **gcloud**, you can run any DML statement from the client libraries. You can find multiple examples for all the different languages in the documentation.

This is more flexible than loading data using **gcloud**, but still has limitations when loading a source containing a large number of rows.

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Task 5. Load data using Dataflow
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Congratulations!

banking-db – Spanner Studio – q

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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CLOUD SHELL
Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ nano insert.py
```

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banking-db – Spanner Studio – q

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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CLOUD SHELL
Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
  GNU nano 7.2                                    insert.py *
from google.cloud import spanner
from google.cloud.spanner_v1 import param_types

INSTANCE_ID = "banking-instance"
DATABASE_ID = "banking-db"

spanner_client = spanner.Client()
instance = spanner_client.instance(INSTANCE_ID)
database = instance.database(DATABASE_ID)

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    row_ct = transaction.execute_update(
        "INSERT INTO Customer (CustomerId, Name, Location)"
        "VALUES ('b2b4002d-7813-4551-b83b-366ef95f9273', 'Shana Underwood', 'Ely Iowa')"
    )
    print("{} record(s) inserted.".format(row_ct))

database.run_in_transaction(insert_customer)
```

```
^G Help          ^O Write Out     ^W Where Is      ^K Cut           ^T Execute       ^C Location      M-U Undo         M-A Set Mark
^X Exit          ^R Read File     ^\ Replace       ^U Paste         ^J Justify       ^/ Go To Line    M-E Redo         M-6 Copy
```

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banking-db – Spanner Studio – q

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ nano insert.py
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ python3 insert.py
1 record(s) inserted.
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
```

16°C Sunny | Search | ENG IN | 03:34 PM 09-01-2026

banking-db – Spanner Studio –

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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All instances > Instance: banking-instance: Overview > Google Standard SQL Database: banking-db: Spanner Studio

Open in Dataplex | Learn

Explorer

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        - Keys 1
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Untitled query | Untitled query | Open CLI | Gemini settings | View in BigQuery

Run | Save | Format | Clear | Documentation | Valid

```
1  SELECT * FROM Customer;
```

Results | Explanation | Export

CustomerId	Name	Location
"b2b4002d-7813-4551-b83b-366ef95f9273"	"Shana Underwood"	"Ely Iowa"
"bdaaaa97-1b4b-4e58-b4ad-84030de92235"	"Richard Nelson"	"Ada Ohio"

Rows per page: 30 | 1 – 2 of 2

CLOUD SHELL
Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ nano insert.py
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ python3 insert.py
1 record(s) inserted.
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
```

16°C Sunny | Search | ENG IN | 03:34 PM 09-01-2026

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End Lab 02:01:20 Time limit

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Open Google Cloud console

Username
student-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

Task 4. Insert batch data through a client library

A more optimal way to load data into Spanner is doing so in batches. All of the client libraries support batch loading. This example uses Python.

1. In the Cloud Shell enter the following command to invoke the **Nano** text editor and create a new empty configuration file named **batch_insert.py**.

```
nano batch_insert.py
```

2. Paste the code block listed below.

```
from google.cloud import spanner
from google.cloud.spanner_v1 import param_types

INSTANCE_ID = "banking-instance"
DATABASE_ID = "banking-db"

spanner_client = spanner.Client()
instance = spanner_client.instance(INSTANCE_ID)
```

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libraries support batch loading. This example uses Python.

1. In the Cloud Shell enter the following command to invoke the **Nano** text editor and create a new empty configuration file named **batch_insert.py**.

```
nano batch_insert.py
```

2. Paste the code block listed below.

```
from google.cloud import spanner
from google.cloud.spanner_v1 import param_types

INSTANCE_ID = "banking-instance"
DATABASE_ID = "banking-db"

spanner_client = spanner.Client()
instance = spanner_client.instance(INSTANCE_ID)
database = instance.database(DATABASE_ID)

with database.batch() as batch:
    batch.insert(
        table="Customer",
```

Lab setup instructions and requirements
Protect your account and
End Lab 02:01:05 Time limit
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Open Google Cloud console
Username student-01-ee6a49e0b325(
Password dvkof4kVFrFm
Project ID qwiklabs-gcp-04-795a831(
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Protect your account and

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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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

```
        values=[
        ('edfc683f-bd87-4bab-9423-01d1b2307c0d', 'John Elkins',
'Roy Utah'),
        ('1f3842ca-4529-40ff-acdd-88e8a87eb404', 'Martin
Madrid', 'Ames Iowa'),
        ('3320d98e-6437-4515-9e83-137f105f7fbc', 'Theresa
Henderson', 'Anna Texas'),
        ('6b2b2774-add9-4881-8702-d179af0518d8', 'Norma Carter',
'Bend Oregon'),

        ],
    )

print("Rows inserted")
```

3. Press **Ctrl+X** to exit Nano, **Y** to confirm the update, and press **Enter** to save your changes.

4. Run the python code.

```
python3 batch_insert.py
```

5. Go back to Cloud Console, refresh to see the new data you just inserted.

30/100
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End Lab 02:00:47 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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831(

```
        ('3320d98e-6437-4515-9e83-137116517bc', 'Theresa
Henderson', 'Anna Texas'),
        ('6b2b2774-add9-4881-8702-d179af0518d8', 'Norma Carter',
'Bend Oregon'),

        ],
    )

print("Rows inserted")
```

3. Press **Ctrl+X** to exit Nano, **Y** to confirm the update, and press **Enter** to save your changes.

4. Run the python code.

```
python3 batch_insert.py
```

5. Go back to Cloud Console, refresh to see the new data you just inserted.

The batch method is more efficient, since it's run as a single request. Only one client-server round trip is needed, reducing latency.

However this is a very slow and resource consuming method to load data.

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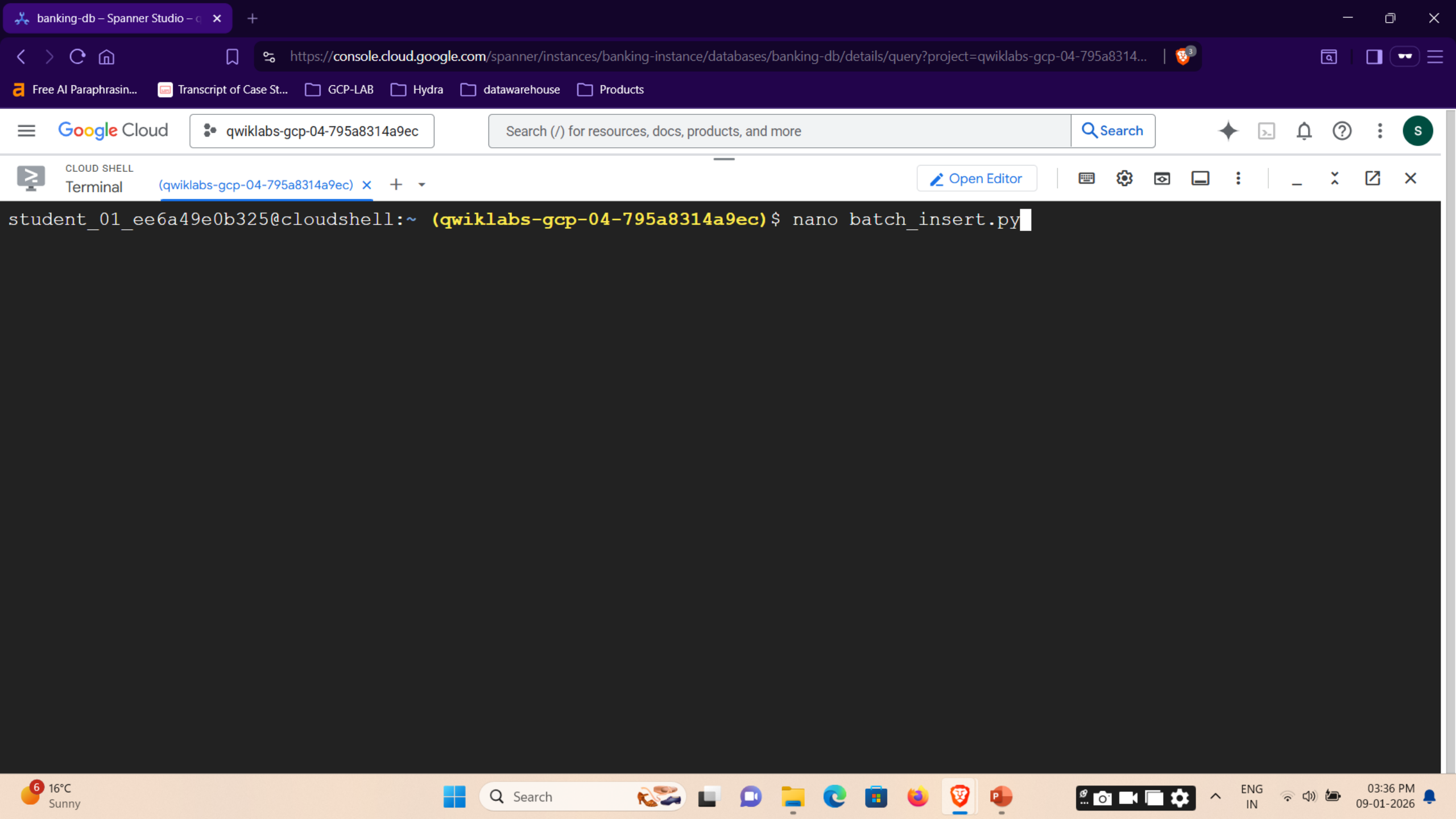
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03:36 PM
09-01-2026

banking-db – Spanner Studio – q

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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CLOUD SHELL
Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
 GNU nano 7.2                                    batch_insert.py *
from google.cloud import spanner
from google.cloud.spanner_v1 import param_types

INSTANCE_ID = "banking-instance"
DATABASE_ID = "banking-db"

spanner_client = spanner.Client()
instance = spanner_client.instance(INSTANCE_ID)
database = instance.database(DATABASE_ID)

with database.batch() as batch:
    batch.insert(
        table="Customer",
        columns=("CustomerId", "Name", "Location"),
        values=[
        ('edfc683f-bd87-4bab-9423-01d1b2307c0d', 'John Elkins', 'Roy Utah'),
        ('1f3842ca-4529-40ff-acdd-88e8a87eb404', 'Martin Madrid', 'Ames Iowa'),
        ('3320d98e-6437-4515-9e83-137f105f7fbc', 'Theresa Henderson', 'Anna Texas'),
        ('6b2b2774-add9-4881-8702-d179af0518d8', 'Norma Carter', 'Bend Oregon'),

        ],
    )

print("Rows inserted")
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo M-A Set Mark M-] To Bracket
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line M-E Redo M-6 Copy ^Q Where Was

Low visibility Now | Search | ENG IN | 03:39 PM 09-01-2026

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https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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All instances > Instance: banking-instance: Overview > Google Standard SQL Database: banking-db: Spanner Studio

Open in Dataplex | Learn

Explorer

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      - Customer
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        - Indexes 0
      - Change streams 0
      - Views 0
      - Models 0

Untitled query | Untitled query | Open CLI | Gemini settings | View in BigQuery

Run | Save | Format | Clear | Documentation | Valid

```
1  SELECT * FROM Customer;
```

Results | Explanation | Export

CustomerId	Name	Location
"1f3842ca-4529-40ff-acdd-88e8a87eb404"	"Martin Madrid"	"Ames Iowa"
"3320d98e-6437-4515-9e83-137f105f7fbc"	"Theresa Henderson"	"Anna Texas"
"6b2b2774-add9-4881-8702-d179af0518d8"	"Norma Carter"	"Bend Oregon"
"b2b4002d-7813-4551-b83b-366ef95f9273"	"Shana Underwood"	"Ely Iowa"
"bdaaaa97-1b4b-4e58-b4ad-84030de92235"	"Richard Nelson"	"Ada Ohio"
"edfc683f-bd87-4bab-9423-01d1b2307c0d"	"John Elkins"	"Roy Utah"

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CLOUD SHELL

Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ nano batch_insert.py
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ nano batch_insert.py
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ python3 batch_insert.py
Rows inserted
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
```

Air: Poor Next Monday | Search | ENG IN | 03:41 PM 09-01-2026

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Open Google Cloud console

Username
student-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831(

Task 5. Load data using Dataflow

Dataflow is a Google Cloud service for streaming and batch data processing at large scale. Dataflow uses multiple workers to run data processing in parallel. The way in which data is processed is defined using **pipelines** that transform data from its origin (**sources**) to its destination (**sinks**).

There are connectors for **Spanner** that allow you to connect a database as a **source** or a **sink** in Dataflow.

In order to load big amounts of data, you can use the serverless distributed power of **Dataflow** to read data from a source (for example, a CSV file in **Google Cloud Storage**) and load it into your **Spanner** database using a sink connector.

1. To prepare for the Dataflow job, in the Cloud Shell run these commands to create a bucket in your project and a folder with an empty file inside it.

```
gsutil mb gs://qwiklabs-gcp-04-795a8314a9ec
touch emptyfile
gsutil cp emptyfile gs://qwiklabs-gcp-04-
795a8314a9ec/tmp/emptyfile
```

60/100

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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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

1. To prepare for the Dataflow job, in the Cloud Shell run these commands to create a bucket in your project and a folder with an empty file inside it.

```
gsutil mb gs://qwiklabs-gcp-04-795a8314a9ec
touch emptyfile
gsutil cp emptyfile gs://qwiklabs-gcp-04-795a8314a9ec/tmp/emptyfile
```

2. To ensure that the proper APIs and permissions are set, execute the following block of code in the Cloud Shell.

```
gcloud services disable dataflow.googleapis.com --force
gcloud services enable dataflow.googleapis.com
```

3. From the Console, open the navigation menu (≡) > **View All Products**. Under **Analytics** section, click **Dataflow**.

4. On the top of the screen, click **Create Job From Template**.

5. Place the following values in the template:

60/100

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Congratulations!

banking-db – Spanner Studio – q

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

CLOUD SHELL
Terminal (qwiklabs-gcp-04-795a8314a9ec) | Open Editor

```
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ gsutil mb gs://qwiklabs-gcp-04-795a8314a9ec
touch emptyfile
gsutil cp emptyfile gs://qwiklabs-gcp-04-795a8314a9ec/tmp/emptyfile
Creating gs://qwiklabs-gcp-04-795a8314a9ec/...
Copying file://emptyfile [Content-Type=application/octet-stream]...
/ [1 files][    0.0 B/    0.0 B]
Operation completed over 1 objects.
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$ gcloud services disable dataflow.googleapis.com --force

gcloud services enable dataflow.googleapis.com
Operation "operations/acat.p17-706480685204-6bbd5b02-24eb-4aa9-a8c5-9aaca61f92f4" finished successfully.
Operation "operations/acf.p2-706480685204-fe07b401-86c5-4b0f-b508-9bffe5bc62dd" finished successfully.
student_01_ee6a49e0b325@cloudshell:~ (qwiklabs-gcp-04-795a8314a9ec)$
```

16°C Sunny | Search | ENG IN | 03:44 PM 09-01-2026

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```
gcloud services enable dataflow.googleapis.com
```

3. From the Console, open the navigation menu (☰) > **View All Products**. Under **Analytics** section, click **Dataflow**.

4. On the top of the screen, click **Create Job From Template**.

5. Place the following values in the template:

   - **Job Name**: spanner-load
   - **Regional endpoint**: `us-central1`

6. Scroll down the **Dataflow template** selector and you will see all the different blueprints you can use with Dataflow. Of course, you can also create your own tailored pipelines, using the Beam SDK.

There are two main types of templates:

- **Stream** will create a pipeline for data that is flowing and is processed continuously (for example, online orders from a website).
- **Batch** will process a dataset that has a beginning and an end (for example, files stored in Google Cloud Storage).

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Username
student-01-ee6a49e0b325(
Password
dvkof4kVFrFm
Project ID
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tailored pipelines, using the Beam SDK.

There are two main types of templates:

- **Stream** will create a pipeline for data that is flowing and is processed continuously (for example, online orders from a website).
- **Batch** will process a dataset that has a beginning and an end (for example, files stored in Google Cloud Storage).

In your scenario, you will load data into Spanner banking database from a CSV file with over 150,000 rows.

7. Select the **Text Files on Cloud Storage to Cloud Spanner** template.

8. Place the following values in the template:

Item	Value
Cloud Spanner Instance Id	**banking-instance**
Cloud Spanner Database Id	**banking-db**
Text Import Manifest file	**spls/gsp1049/manifest.json**

Lab setup instructions and requirements
Protect your account and
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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-01-ee6a49e0b325(
Password
dvkof4kVFrFm
Project ID
qwiklabs-gcp-04-795a831(

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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-01-ee6a49e0b325

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

The `manifest.json` file format is explained in the tutorial for this template (you can access it by clicking **open tutorial** just above the parameter input fields).

The manifest file must be stored in a Google Cloud Storage bucket that Dataflow can access to and read from. For this lab, this is the content of **manifest.json**:

```
{
    "tables": [
        {
            "table_name": "Customer",
            "file_patterns": [
                "gs://spls/gsp1049/Customer_List.csv"
            ],
            "columns": [
                {"column_name" : "CustomerId", "type_name" : "STRING" },
                {"column_name" : "Name", "type_name" : "STRING" },
                {"column_name" : "Location", "type_name" : "STRING" }
            ]
        }
    ]
}
```

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Open Google Cloud console

Username
student-01-ee6a49e0b325

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

```
        }
    ]
}
```

The manifest file specifies the table, name and type of the columns (in the order that they appear in the CSV file), and the CSV file itself, which is also stored in a Google Cloud Storage bucket.

This is what the CSV file looks like:

```
9d238899-8348-4642-9c00-77dc4481145b,Nicole Anderson,Ada Ohio
360ecaa6-9ec3-4fa0-81a5-3b0dc629e1fa,Ellen Richardson,Ada Ohio
8ee6c2ea-923b-45db-8d51-7f8e7a117af0,Wendy Daniel,Ada Ohio
1d7112cc-c1ee-414f-9325-95c97f9a25d3,Virginia Beasley,Ada Ohio
...
```

9. For the **Temporary Location** parameter input the following value:

```
qwiklabs-gcp-04-795a8314a9ec/tmp
```

10. Expand **Optional Parameters**.

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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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

```
...
```

9. For the **Temporary Location** parameter input the following value:

```
qwiklabs-gcp-04-795a8314a9ec/tmp
```

10. Expand **Optional Parameters**.

11. Uncheck **Use default machine type**.

12. Under **General purpose**, choose the following:

    - Series: **E2**
    - Machine type: **e2-medium (2 vCPU, 4 GB memory)**

13. Click **Run Job** to start the pipeline.

14. The process will take around 12 to 16 minutes. You will see Dataflow go through multiple stages, first starting up the workers and analyzing the pipeline from the template. Then it will read the manifest file and will start processing the CSV file.

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Congratulations!

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Protect your account and

End Lab 01:53:40 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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831(

- Machine type: **e2-medium (2 vCPU, 4 GB memory)**

13. Click **Run Job** to start the pipeline.

14. The process will take around 12 to 16 minutes. You will see Dataflow go through multiple stages, first starting up the workers and analyzing the pipeline from the template. Then it will read the manifest file and will start processing the CSV file.

Note: If your pipeline fails with an error related to worker nodes not being provisioned, create a new job with the same name from the same template starting from Step 4. This time choose a different Regional endpoint in the United States. For example if Step 5 lists "**us-east4**" as your Regional endpoint try "**us-east1**" for your second attempt.

Wait until Dataflow finishes processing before proceeding. It will have a status of **Succeeded** when complete.

15. Go back to **Spanner** by selecting it in the left menu on Cloud Console. Navigate to the **Customer** table and select **Data**. You will see all the new rows that have been loaded using Dataflow.

16. Navigate back to `banking-db` overview page. On the left menu, click **Spanner**

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Protect your account and

End Lab 01:53:11 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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831

from Step 4. This time choose a different Regional endpoint in the United States. For example if Step 5 lists "**us-east4**" as your Regional endpoint try "**us-east1**" for your second attempt.

Wait until Dataflow finishes processing before proceeding. It will have a status of **Succeeded** when complete.

15. Go back to **Spanner** by selecting it in the left menu on Cloud Console. Navigate to the **Customer** table and select **Data**. You will see all the new rows that have been loaded using Dataflow.

16. Navigate back to `banking-db` overview page. On the left menu, click **Spanner Studio** and run the following to see the total number of rows in the **Customer** table:

```
SELECT COUNT(*) FROM Customer;
```

With **Dataflow** templates it is easy (and quick!) to load big amounts of data. You can load dumps from other databases, and load not only CSV but also Avro files following the same procedure. You can even run the process the other way around, using your Spanner database as a source in **Dataflow** to export the data in CSV or Avro.

60/100

GSP1049
Overview
Setup and requirements
Task 1. Explore the instance
Task 2. Insert data with DML
Task 3. Insert data through a client library
Task 4. Insert batch data through a client library
Task 5. Load data using Dataflow
Task 6. Backup your database
Congratulations!

banking-db – Spanner Studio – qwikl | Jobs – Dataflow – qwiklabs-gcp-(| https://console.cloud.google.com/dataflow/jobs?referrer=search&project=qwiklabs-gcp-04-795a8314a9ec

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

Dataflow / Jobs

- Overview
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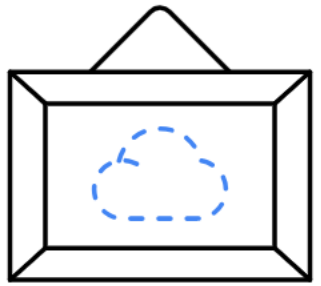
- Release Notes

Jobs | Create Job From Template | Create Job From Builder | Enable sorting | Refresh | Manage | Learn

Dataflow provides unified streaming and batch data processing that's serverless, fast, and cost-effective. Learn more

Running | Archived | Filter | Filter jobs

Name	Type	End time	Elapsed time	Start time	Status	SDK version	ID	Region	Insights



No jobs to display.

Get started by creating a job from a template.

https://console.cloud.google.com/dataflow/createjob?project=qwiklabs-gcp-04-795a8314a9ec

16°C Sunny | Search | ENG IN | 03:49 PM 09-01-2026

banking-db – Spanner Studio – qwikl | Create job from template – Data

https://console.cloud.google.com/dataflow/createjob?project=qwiklabs-gcp-04-795a8314a9ec

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Create job from template

Dataflow templates
Launch jobs from Google-provided or custom templates

Job builder
Create custom jobs with the builder form and YAML editor

Job name *
spanner-load

Filter Text Files on Cloud Storage to Cloud Spanner

Process Data in Bulk (batch)

Text Files on Cloud Storage to Cloud Spanner

Cancel OK

Error: value is required

Run job

Equivalent REST or command line

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banking-db – Spanner Studio – qwikl | Create job from template – Data

https://console.cloud.google.com/dataflow/createjob?project=qwiklabs-gcp-04-795a8314a9ec

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Create custom jobs with the builder form and YAML editor

The Cloud Storage Text to Cloud Spanner template is a batch pipeline that reads CSV text files from Cloud Storage and imports them to a Cloud Spanner database.

Open tutorial

Target

Cloud Spanner instance ID *
banking-instance
The instance ID of the Spanner database.

Cloud Spanner database ID *
banking-db
The database ID of the Spanner database.

Optional Target Parameters

Source

Text Import Manifest file *
gs:// spls/gsp1049/manifest.json Browse
The path in Cloud Storage to use when importing manifest files. For example, `gs://your-bucket/your-folder/your-manifest.json`

Optional Source Parameters

Required Parameters

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banking-db – Spanner Studio – qwikl | Create job from template – Data

https://console.cloud.google.com/dataflow/createjob?project=qwiklabs-gcp-04-795a8314a9ec

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Optional Target Parameters

Source

Text Import Manifest file *
gs:// spls/gsp1049/manifest.json Browse

The path in Cloud Storage to use when importing manifest files. For example, `gs://your-bucket/your-folder/your-manifest.json`

Optional Source Parameters

Required Parameters

Temporary location *
gs:// qwiklabs-gcp-04-795a8314a9ec/tmp Browse

Path and filename prefix for writing temporary files. Ex: gs://your-bucket/temp

Encryption

- (•) Google-managed encryption key
  Keys owned by Google
- ( ) Cloud KMS key
  Keys owned by customers

Dataflow Prime

- [ ] Enable Dataflow Prime
  Dataflow Prime is a new data processing platform that builds on Dataflow and brings improvements in resource utilization and distributed diagnostics. A job running Dataflow

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banking-db – Spanner Studio – qwikl | Create job from template – Data

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Launch jobs from Google-provided or custom templates

Job builder
Create custom jobs with the builder form and YAML editor

Optional Parameters

gs:// Invalid rows output path — Browse

The Cloud Storage path to use when writing rows that cannot be imported. For example, `gs://your-bucket/your-path`. Defaults to empty.

Max workers

The maximum number of Google Compute Engine instances to be made available to your pipeline during execution, must be larger than 0

Number of workers

The initial number of Google Compute Engine instances to use, must be larger than 0

Worker region

Worker zone

☑ Use default machine type

The machine type for Google Compute Engine instances used in your pipeline execution. e.g., n1-standard-1. Learn more

Service account email

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banking-db – Spanner Studio – qwikl | Create job from template – Data

https://console.cloud.google.com/dataflow/createjob?project=qwiklabs-gcp-04-795a8314a9ec

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Create job from template

Dataflow templates
Launch jobs from Google-provided or custom templates

Job builder
Create custom jobs with the builder form and YAML editor

Worker region

Worker zone

☐ Use default machine type

The machine type for Google Compute Engine instances used in your pipeline execution. e.g., n1-standard-1. Learn more

✓ General purpose | Compute optimized | Memory optimized | GPUs

Machine types for common workloads, optimized for cost and flexibility

Series: E2

CPU platform selection based on availability

Machine type: e2-medium (2 vCPU, 1 core, 4 GB memory)

vCPU	Memory
1-2 vCPU (1 shared core)	4 GB

Service account email

The email address of the service account to run the job as

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banking-db – Spanner Studio – qwikl | spanner-load – Dataflow – qwikl

https://console.cloud.google.com/dataflow/jobs/us-central1/2026-01-09_02_24_35-13951005200660967419;graphView=0?project=qwiklabs-gcp...

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

Dataflow / Jobs / Dataflow job details

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- Release Notes

spanner-load | Clone | Stop | Archive | Import as pipeline | Send feedback

Job Graph | Execution Details | Job Metrics | Cost | Recommendations

Job steps view: Graph view

Clear selection

TextImportTransform
Running
0 of 96 stages succeeded

Logs | Show | 2

Job info

Job name	spanner-load
Job ID	2026-01-09_02_24_35-13951005200660967419
Job type	Batch
Job status	Running
SDK version	Apache Beam SDK for Java 2.69.0 A newer version of the SDK family exists and updating is recommended. Learn more
Job region	us-central1
Current workers	1
Latest worker status	Worker pool started.
Start time	January 9, 2026, 3:54:36 PM GMT+5
Elapsed time	2 min 10 sec
Encryption type	Google-managed
Dataflow Prime	Disabled
Dataplex Lineage	Disabled
Runner v2	Enabled
Dataflow Shuffle	Enabled

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banking-db – Spanner Studio – qwikl | spanner-load – Dataflow – qwikl

https://console.cloud.google.com/dataflow/jobs/us-central1/2026-01-09_02_24_35-13951005200660967419;graphView=0?project=qwiklabs-gcp...

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

Dataflow / Jobs / Dataflow job details

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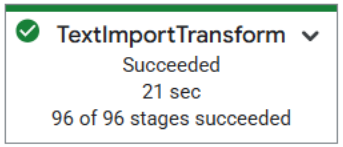
spanner-load | Clone | Stop | Archive | + Import as pipeline | Send feedback

Job Graph | Execution Details | Job Metrics | Cost | Recommendations

Job steps view: Graph view

Clear selection



Logs | Show | 2

Job info

Job name	spanner-load
Job ID	2026-01-09_02_24_35-13951005200660967419
Job type	Batch
Job status	Succeeded
SDK version	Apache Beam SDK for Java 2.69.0 A newer version of the SDK family exists and updating is recommended. Learn more
Job region	us-central1
Current workers	0
Latest worker status	Worker pool stopped.
Start time	January 9, 2026, 3:54:36 PM GMT+5
Elapsed time	5 min
Encryption type	Google-managed
Dataflow Prime	Disabled
Dataplex Lineage	Disabled
Runner v2	Enabled
Dataflow Shuffle	Enabled

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banking-db – Spanner Studio – q | spanner-load – Dataflow – qwiklabs-q

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

All instances > Instance: banking-instance: Overview > Google Standard SQL Database: banking-db: Spanner Studio

Open in Dataplex | Learn

Explorer

Search

- Schemas 3
  - Default
    - Tables 1
      - Customer
        - Columns 3
        - Keys 1
        - Indexes 0
      - Change streams 0
      - Views 0
      - Models 0
      - Graphs 0
  - INFORMATION_SCHEMA
  - SPANNER_SYS
- Roles 3
- Placements 1

Untitled query | Untitled query | Untitled query

Open CLI | Gemini settings | View in BigQuery

Run | Save | Format | Clear | Documentation | Valid

```
1  SELECT COUNT(*) FROM Customer;
```

Results | Explanation | Export

Unspecified
151484

Rows per page: 30 | 1 – 1 of 1

16°C Sunny | Search | ENG IN | 04:01 PM 09-01-2026

banking-db – Spanner Studio – q | spanner-load – Dataflow – qwiklabs-c

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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All instances > Instance banking-instance: Overview > Google Standard SQL Database banking-db: Spanner Studio

Open in Dataplex | Learn

Explorer

Search

- Schemas 3
  - Default
    - Tables 1
      - Customer
        - Columns 3
        - Keys 1
        - Indexes 0
      - Change streams 0
      - Views 0
      - Models 0
      - Graphs 0
  - INFORMATION_SCHEMA
  - SPANNER_SYS
- Roles 3
- Placements 1

Untitled query | Untitled query | Untitled query

Open CLI | Gemini settings | View in BigQuery

Run | Save | Format | Clear | Documentation | Valid

```
1  SELECT * FROM Customer;
```

Results | Explanation | Export

The total set of results is too large to load in the console. View the first 13027 rows of data below.

CustomerId	Name	Location
"00000c08-c9e8-4c41-b329-ae14ca8024a0"	"Julie Spotts"	"Cleveland Tennessee"
"000106aa-9396-43db-9b82-126e7b1fbedf"	"Frank Butler"	"Bridgeport Connecticut"
"0001bfcb-4512-4b98-89af-1a03986e34a4"	"Alice Perez"	"New York New York"
"00024ba7-6e8f-4b2a-b935-a8c3f62e8223"	"Kathrine Smith"	"Sacramento California"
"00025fd6-e3a7-4f39-b0b2-f1077c607f22"	"Victor Parker"	"Portland Texas"
"000264f9-1f32-4995-b241-ccbcb85fff09"	"Everett Meyer"	"Aberdeen Washington"
"00028e4e-8ea8-4df6-8801-73f6b52953f8"	"Leon Leblanc"	"Huntington Beach California"
"0002ccf6-d05d-47d0-85ee-c980c7f56fb0"	"Jerry Nieves"	"Fort Worth Texas"
"00031af1-34db-406b-84eb-3e3d1b7cfb1f"	"Milton Factor"	"Sulphur Louisiana"
"000352b8-d868-407e-bf81-fd888f7b0a79"	"Christy Hansen"	"Broadalbin New York"

Rows per page: 30 | 1 – 30 of 13027

16°C Sunny | Search | ENG IN | 04:02 PM 09-01-2026

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Cloud Spanner - Loading Data and Performing B:

Dashboard
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Lab setup instructions and requirements

Protect your account and

End Lab 01:34:11 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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831(

Task 6. Backup your database

Using **Dataflow** as explained above is a way to create backups of your data. But **Spanner** has its own tool for backups. You can backup a **Spanner** database from the Cloud Console, client libraries or **gcloud** commands. Check the previous links for documentation.

In this lab, you will use the **Cloud Console** to backup your database.

1. Select **Backup/Restore** from the left menu.
2. Click **Create Backup**.
3. Place or select the following values in the wizard:

Item	Value
Database Name	**banking-db**
Backup Name	**banking-backup-001**
Expiration Date	**1 year**

100/100

GSP1049
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Task 3. Insert data through a client library
Task 4. Insert batch data through a client library
Task 5. Load data using Dataflow
Task 6. Backup your database
Congratulations!

Contents
Cloud Spanner - Loading Data and Performing B:

Lab setup instructions and requirements

Protect your account and

End Lab 01:33:40 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-01-ee6a49e0b325(

Password
dvkof4kVFrFm

Project ID
qwiklabs-gcp-04-795a831(

1. Select **Backup/Restore** from the left menu.
2. Click **Create Backup**.
3. Place or select the following values in the wizard:

Item	Value
Database Name	**banking-db**
Backup Name	**banking-backup-001**
Expiration Date	**1 year**

4. Click **Create**.
5. The backup will take around 15 minutes to complete and will appear in the **Backups** list while being created.

100/100
GSP1049
Overview
Setup and requirements
Task 1. Explore the instance
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Task 3. Insert data through a client library
Task 4. Insert batch data through a client library
Task 5. Load data using Dataflow
Task 6. Backup your database
Congratulations!

banking-db – Spanner Studio – q | spanner-load – Dataflow – qwiklabs-c | qwiklabs-gcp-04-795... – Google Clou

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/query?project=qwiklabs-gcp-04-795a8314...

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Spanner

ce
ng-instance: Overview

Google Standard SQL Database
banking-db: Spanner Studio

Open in Dataplex | Learn

DATABASE
- Overview
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OBSERVABILITY
- System insights
- Query insights
- Lock insights
- Transaction insights
- Hotspot insights
- Key Visualizer

Release Notes

Untitled query | Untitled query | Untitled query

Open CLI | Gemini settings | View in BigQuery

Run | Save | Format | Clear | Documentation

Valid

```
1  SELECT * FROM Customer;
```

Results | Explanation

Export

The total set of results is too large to load in the console. View the first 13027 rows of data below.

CustomerId	Name	Location
"00000c08-c9e8-4c41-b329-ae14ca8024a0"	"Julie Spotts"	"Cleveland Tennessee"
"000106aa-9396-43db-9b82-126e7b1fbedf"	"Frank Butler"	"Bridgeport Connecticut"
"0001bfcb-4512-4b98-89af-1a03986e34a4"	"Alice Perez"	"New York New York"
"00024ba7-6e8f-4b2a-b935-a8c3f62e8223"	"Kathrine Smith"	"Sacramento California"
"00025fd6-e3a7-4f39-b0b2-f1077c607f22"	"Victor Parker"	"Portland Texas"
"000264f9-1f32-4995-b241-ccbcb85fff09"	"Everett Meyer"	"Aberdeen Washington"
"00028e4e-8ea8-4df6-8801-73f6b52953f8"	"Leon Leblanc"	"Huntington Beach California"
"0002ccf6-d05d-47d0-85ee-c980c7f56fb0"	"Jerry Nieves"	"Fort Worth Texas"
"00031af1-34db-406b-84eb-3e3d1b7cfb1f"	"Milton Factor"	"Sulphur Louisiana"
"000352b8-d868-407e-bf81-fd888f7b0a79"	"Christy Hansen"	"Broadalbin New York"

Rows per page: 30 | 1 – 30 of 13027

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/backups?project=qwiklabs-gcp-04-795a8314a9ec

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banking-db – Spanner Studio – qwikl | banking-db – Backup/Restore – | spanner-load – Dataflow – qwiklabs-

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/backups/list?project=qwiklabs-gcp-04-795...

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

Spanner

All instances > Instance banking-instance: Overview > Google Standard SQL Database banking-db: Backup/Restore

Write DDL | Delete database | Open in Dataplex | Hide info panel

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Release Notes

Backup/Restore

Create backup | Create Backup Schedule

Spanner automatically deletes expired backups unless they are being used to restore one or more databases. You cannot delete a backup while it is being used to restore a database. Learn more

Total backup storage	–
Version retention period	1 hour

Backups | Schedules New | Activity

Filter Filter backups

Backup	Backup size	Type	Schedule	Creation time	Version time	Expiration time	Actions

No rows to display

banking-db

Edit or delete roles below, or select "Add principal" to grant new access. Add principal

Show inherited roles in table
Display roles inherited from the parent resources in the table below

Filter Enter property name or value

Role / Principal	Inheritance
Editor (2)	
Owner (3)	
Viewer (1)	

console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/.../cre...

16°C Sunny | Search | ENG IN | 04:06 PM 09-01-2026

banking-db – Spanner Studio – qwikl | banking-db – Backup/Restore – | spanner-load – Dataflow – qwiklabs-

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/backups/create?project=qwiklabs-gcp-04-...

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

Create a backup

Database name banking-db

Backup name
banking-backup-001

Must be unique to the instance. Lowercase letters, numbers, hyphens, underscores allowed.

☐ Create backup from an earlier point in time

Set an expiration date

You can keep a backup for up to one year from its creation date, and restore it any time before it expires. You can keep a copy of a backup for up to one year from the creation date of the original.

◉ 1 year
○ Expire on

Select a date IST

Expiration: January 9, 2027, 4:07:01 PM GMT+5
Note: exact expiration time depends on when you click **Create**.

Encryption

This resource is encrypted with a Google-managed key by default. If you need to manage your encryption, you can use a customer-managed key instead. Learn more

Use existing encryption

About creating backups

A Spanner backup is a transactionally consistent and full copy of your database stored separately from the source database. It can be retained for up to one year after it is created, and you can restore it to a new database at any time before it is deleted.

How it works

- A backup uses the same schema that the source database used when the backup was created.
- Backups are stored in the same instance as the source database, but separate from the database's live data. The instance's configuration specifies the geographic placement and replication of the backups.
- Backups can be restored to a new database in any instance with the same instance configuration. To restore a backup to a database in an instance with a different instance configuration, use the copy feature to make a copy of the completed backup and select an instance with the intended instance configuration during the creation of the copy.
- Data in backups is encrypted and stored in an internal format optimized for fast restoration. Restoring from a backup is faster than importing from an external location.
- Permissions can be customized for individual backups or all backups in an instance, depending on needs. Learn more
- Backup creation does not impact database performance given sufficient CPU as described in the CPU usage recommendations. Database requests have higher

16°C Sunny | Search | ENG IN | 04:07 PM 09-01-2026

banking-db – Spanner Studio – qwikl | banking-db – Backup/Restore – | spanner-load – Dataflow – qwiklabs-

https://console.cloud.google.com/spanner/instances/banking-instance/databases/banking-db/details/backups/list?project=qwiklabs-gcp-04-...

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Google Cloud | qwiklabs-gcp-04-795a8314a9ec | Search (/) for resources, docs, products, and more | Search

Spanner

All instances > Instance banking-instance: Overview > Google Standard SQL Database banking-db: Backup/Restore

Write DDL | Delete database | Open in Dataplex | Learn | Hide info panel

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- Spanner Studio
- Import/Export
- Backup/Restore
- Operations
- Change streams

OBSERVABILITY
- System insights
- Query insights
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- Transaction insights
- Hotspot insights
- Key Visualizer

Release Notes

Backup/Restore

Create backup | Create Backup Schedule

Spanner automatically deletes expired backups unless they are being used to restore one or more databases. You cannot delete a backup while it is being used to restore a database. Learn more

Total backup storage	–
Version retention period	1 hour

Backups | Schedules New | Activity

Filter: Filter backups

Backup	Backup size	Type	Schedule	Chain ID	Creation time	Version time	E:	Actions
banking-backup-001	–	On-demand	–	–	Jan 9, 2026, 4:07:18 PM GMT+5	Jan 9, 2026, 4:07:18.375800 PM GMT+5:30	J... G	

banking-db

Edit or delete roles below, or select "Add principal" to grant new access.

Add principal

Show inherited roles in table

Display roles inherited from the parent resources in the table below

Filter: Enter property name or value

Role / Principal	Inheritance
Editor (2)	
Owner (3)	
Viewer (1)	

16°C Sunny | Search | ENG IN | 04:12 PM 09-01-2026