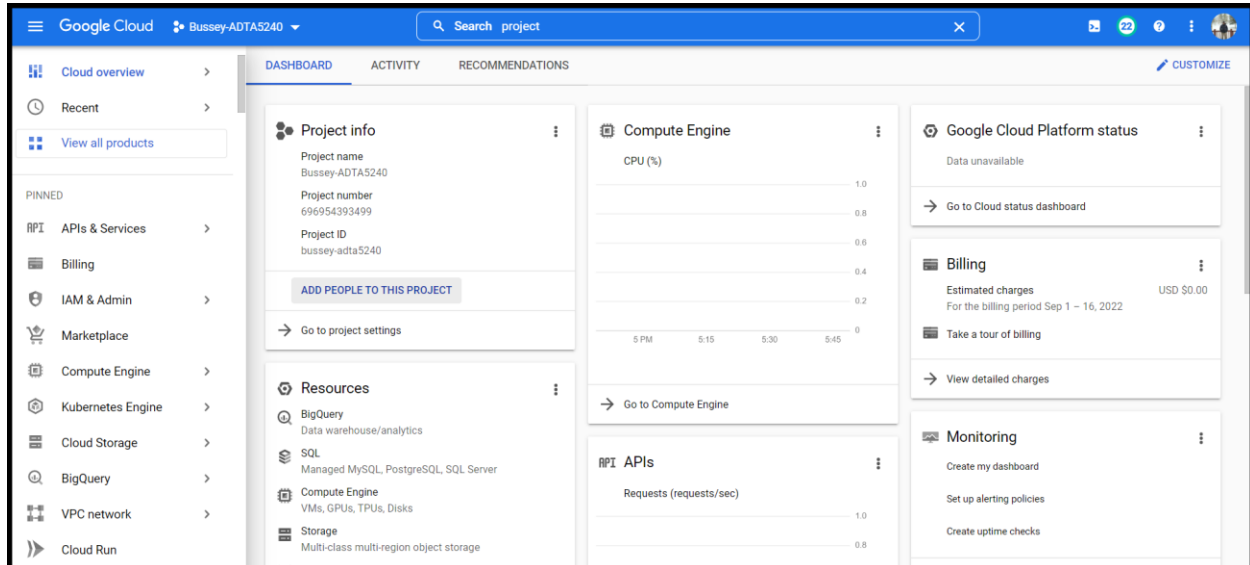


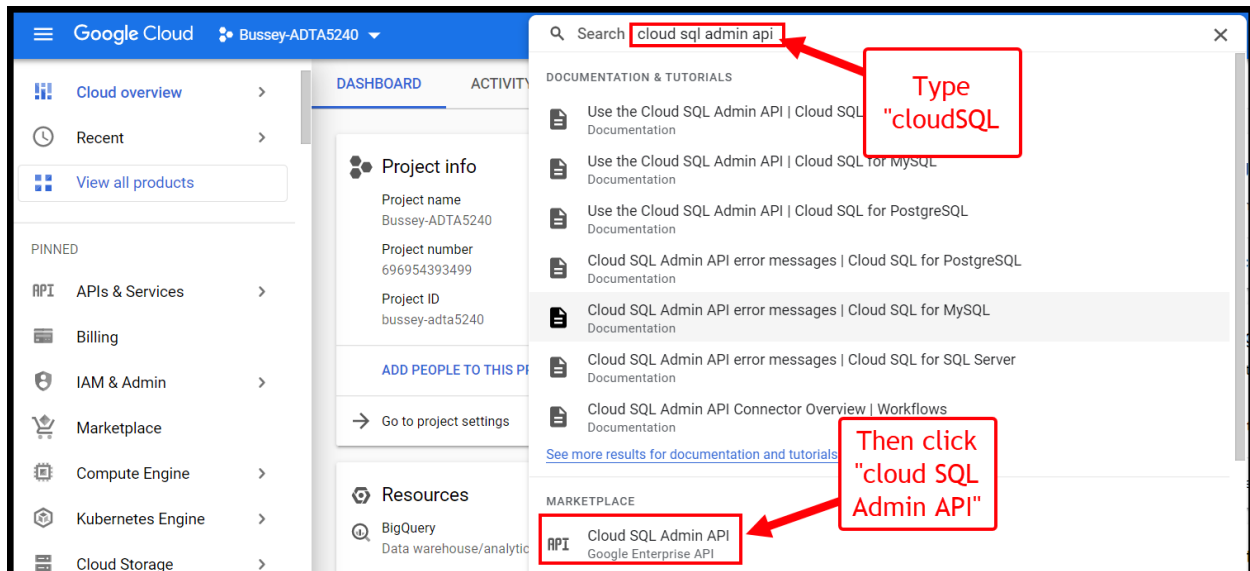
Create a SQL instance, create a table, load data

This tutorial will show you how to create a MySQL instance and connect to it. This will allow you to execute basic SQL operations using GCP and a client.

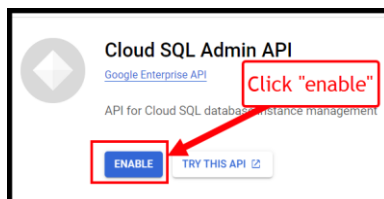
Step 1: Setup your project. Navigate to dashboard and select or create a google cloud project.



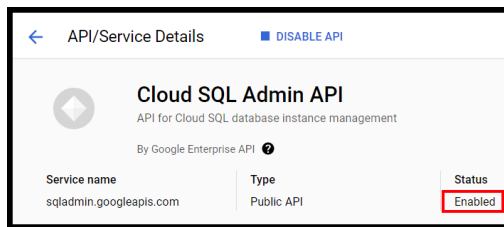
Step 2: Type “cloud SQL admin api” in the search bar at the top, then click “Cloud SQL Admin API”.



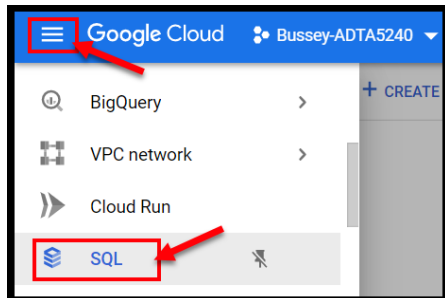
Step 3: “Enable the cloud SQL Admin API” by clicking “Enable”.



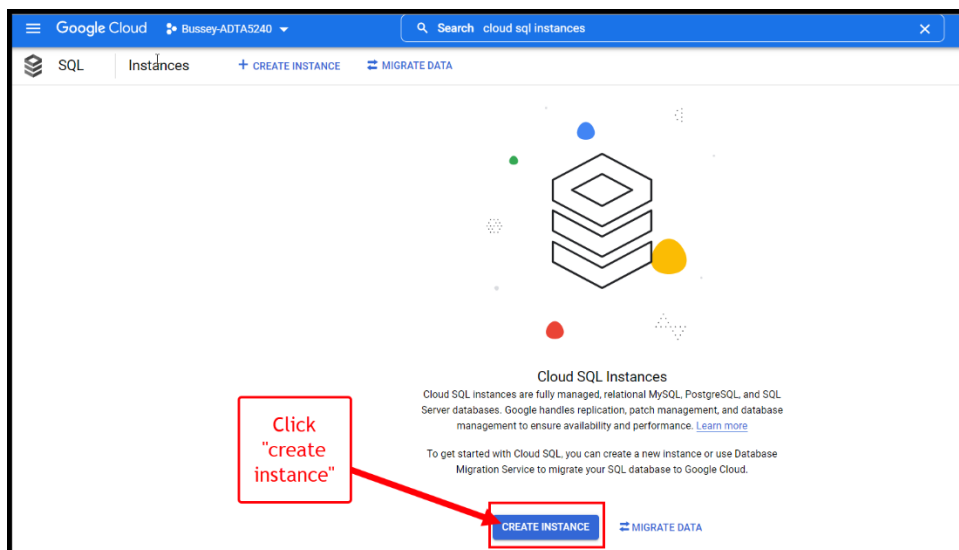
The screenshot below will show you how to see if Cloud SQL Admin API is enabled.



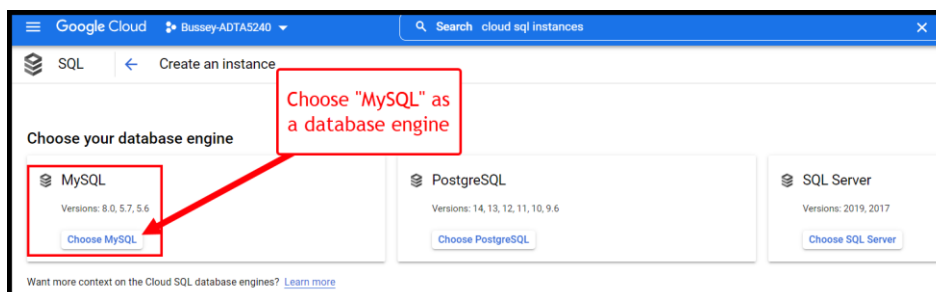
Step 4: Click the horizontal bars at the top left corner of your screen and then click “SQL”.



Step 5: On the next screen click “create instance”.



Step 6: Then click choose “MySQL” as a database engine”.



Step 7: Use “testinstance” as an instance ID.

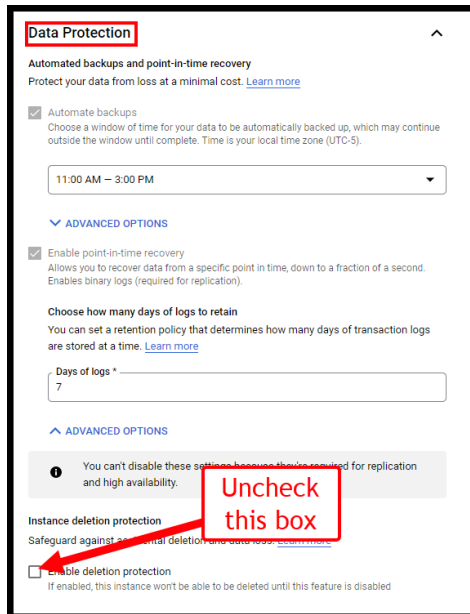


Instance info

Instance ID

testinstance

Step 8: Under “Data Protection, uncheck “Enable Deletion Protection”.



Data Protection

Automated backups and point-in-time recovery

Protect your data from loss at a minimal cost. [Learn more](#)

☒ Automate backups

Choose a window of time for your data to be automatically backed up, which may continue outside the window until complete. Time is your local time zone (UTC-5).

11:00 AM – 3:00 PM

ADVANCED OPTIONS

☒ Enable point-in-time recovery

Allows you to recover data from a specific point in time, down to a fraction of a second. Enables binary logs (required for replication).

Choose how many days of logs to retain

You can set a retention policy that determines how many days of transaction logs are stored at a time. [Learn more](#)

Days of logs *

7

ADVANCED OPTIONS

You can't disable these settings because they're required for replication and high availability.

Instance deletion protection

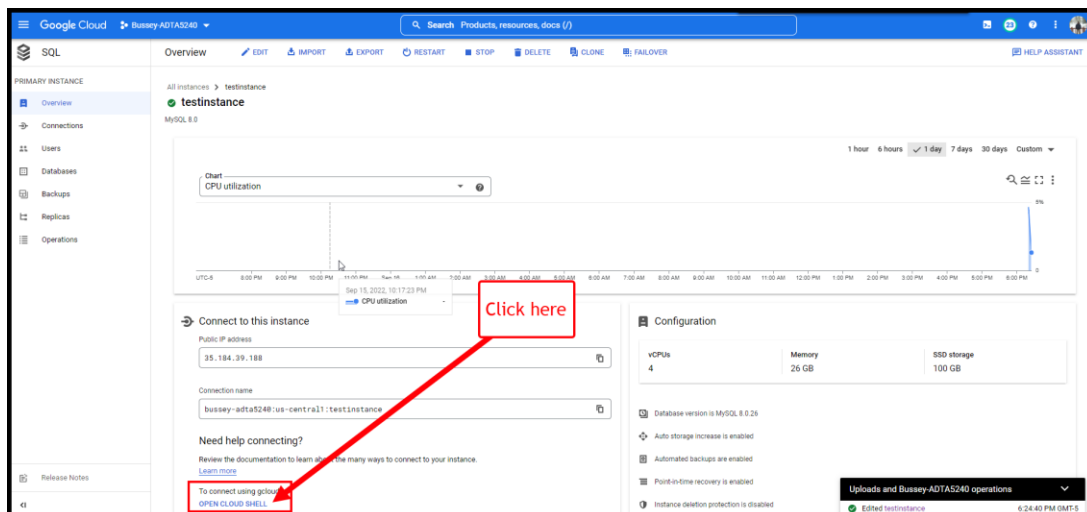
Safeguard against accidental deletion and automatic failover.

☐ Enable deletion protection

If enabled, this instance won't be able to be deleted until this feature is disabled.

Uncheck this box

Step 9: Once this is done scroll down and click create, it will take a few minutes to create.



Google Cloud

Bussey-ADTA5240

SQL

Overview

Primary instance

testinstance

MySQL 8.0

Chart

CPU utilization

1 hour 6 hours 1 day 7 days 30 days Custom

UTC-8 8:00 PM 9:00 PM 10:00 PM 11:00 PM 12:00 AM 1:00 AM 2:00 AM 3:00 AM 4:00 AM 5:00 AM 6:00 AM 7:00 AM 8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM 6:00 PM

Click here

Connect to this instance

Public IP address

35.184.39.188

Connection name

bussey-adta5240-us-central1:testinstance

Need help connecting?

Review the documentation to learn about the many ways to connect to your instance. [Learn more](#)

To connect using gcloud

OPEN CLOUD SHELL

Configuration

vCPUs 4

Memory 26 GB

SSD storage 100 GB

Database version is MySQL 8.0.28

Auto storage increase is enabled

Automated backups are enabled

Point-in-time recovery is enabled

Instance deletion protection is disabled

Uploads and Bussey-ADTA5240 operations

Edited testinstance

6:24:40 PM GMT-5

Step 10: Once the Cloud Shell has been activated, you will see “gcloud SQL connect testinstance —user=root —quiet”.

```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to bussey-adta5240.
Use "gcloud config set project [PROJECT ID]" to change to a different project.
busseyjr@cloudshell:~ (bussey-adta5240) $ gcloud sql connect testinstance --user=root --quiet
```

Step 11: Enter your password and press enter:

```
Connecting to database with SQL user [root].Enter password: █
```

If your password is entered correctly, you will see the following:

```
Connecting to database with SQL user [root].Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 180
Server version: 8.0.26-google (Google)

Copyright (c) 2000, 2022, Oracle and/or its affiliates.

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> █
```

Step 12: Type the following:

```
CREATE DATABASE customers;
```

```
USE customers;
```

```
CREATE TABLE customers
```

```
-> (fName VARCHAR(255),
```

```
-> lName VARCHAR(255),
```

```
-> phone VARCHAR(255),
```

```
-> address VARCHAR(255),
```

```
-> city VARCHAR(255),
```

```
-> state VARCHAR(255),
```

```
-> model VARCHAR(255),
```

```
-> comments VARCHAR(255));
```

The following should be displayed after it is typed:

```
Google Cloud Bussey-ADTAS240
SQL Overview EDIT IMPORT EXPORT RESTART STOP DELETE CLONE FAILOVER HELP ASSISTANT
CLOUD SHELL Terminal Bussey-ADTAS240 x + +
Your Cloud Platform project in this session is set to Bussey-ADTAS240.
Use gcloud config set project [PROJECT_ID] to change to a different project.
Bussey@cloudshell: (Bussey-ADTAS240) $ gcloud sql connect testinstance --user=root --quiet
Allocating port 19 for tunneling connection for 3 minutes...done.
Connecting to database with SQL user [root].Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 180
Server version: 8.0.26-google (Google)

Copyright (c) 2000, 2022, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE customers;
Query OK, 1 row affected (0.01 sec)

mysql> USE customers;
Database changed
mysql> CREATE TABLE customers
-> (fName VARCHAR(255),
-> lName VARCHAR(255),
-> phone VARCHAR(255),
-> address VARCHAR(255),
-> city VARCHAR(255),
-> state VARCHAR(255),
-> model VARCHAR(255),
-> comments VARCHAR(255));
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '(lName VARCHAR(255),
phone VARCHAR(255),
address VARCHAR(255),
city VARCHAR(255)' at line 3
mysql> USE customers;
Database changed
mysql> CREATE TABLE customers
-> (fName VARCHAR(255),
-> lName VARCHAR(255),
-> phone VARCHAR(255),
-> address VARCHAR(255),
-> city VARCHAR(255),
-> state VARCHAR(255),
-> model VARCHAR(255),
-> comments VARCHAR(255));
Query OK, 0 rows affected (0.03 sec)
```

Step 13: Enter data into your newly created table by using the following commands:

INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
("Tony", "Barone", "555-676-7778", "1018 State Street", "Houston", "TX", "A-1237", "This
is the best product I have ever purchased.");

INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
("Helen", "Smith", "777-879-0098", "889 Elm Road", "St. Louis", "MO", "H-435", "I would never
buy this product again!");

INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
("Susan", "Heller", "876-888-6795", "879 Main Street", "Los Angeles", "CA", "K-8887", "All
good");

INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
("Betsy", "Clark", "555-887-1098", "45 West 54th Ave.", "Topeka", "KS", "Z-2", "No issues");

The screenshot shows the Google Cloud SQL console interface. The left sidebar contains navigation links for Overview, Connections, Users, Databases, Backups, Replicas, and Release Notes. The main area displays the 'Need help connecting?' section with links to documentation and a 'Service account' section showing the account ID 'p696954393499-28pla3@gcp-sa-cloud-sql.iam.gserviceaccount.com'. The bottom section shows the Cloud Shell terminal with the following SQL commands and their output:

```
Database changed
mysql> INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
-> ("Tony", "Barone", "555-676-7778", "1018 State Street", "Houston", "TX", "A-1237", "This
-> is the best product I have ever purchased.");
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
-> ("Helen", "Smith", "777-879-0098", "889 Elm Road", "St. Louis", "MO", "H-435", "I would never
-> buy this product again!");
Query OK, 1 row affected (0.02 sec)

mysql> INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
-> ("Susan", "Heller", "876-888-6795", "879 Main Street", "Los Angeles", "CA", "K-8887", "All
-> good");
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
-> ("Betsy", "Clark", "555-887-1098", "45 West 54th Ave.", "Topeka", "KS", "Z-2", "No issues");
Query OK, 1 row affected (0.01 sec)
```

A blue callout box on the right side of the terminal says: "Click here to see details about your Cloud Shell session and usage quota. Got it!". At the bottom right, there is a dropdown menu labeled "Uploads and Bussey-ADTA5240 operations".

Step 14: Retrieve the data by typing “SELECT * FROM customers;”, this command should show the following:

```
CLOUD SHELL
Terminal (bussey-adt5240) X + ▾

Database changed
mysql> INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
-> ("Tony", "Barone", "555-676-7778", "1018 State Street", "Houston", "TX", "A-1237", "This
"> is the best product I have ever purchased.");
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
-> ("Helen", "Smith", "777-879-0098", "889 Elm Road", "St. Louis", "MO", "H-435", "I would never
"> buy this product again!");
Query OK, 1 row affected (0.02 sec)

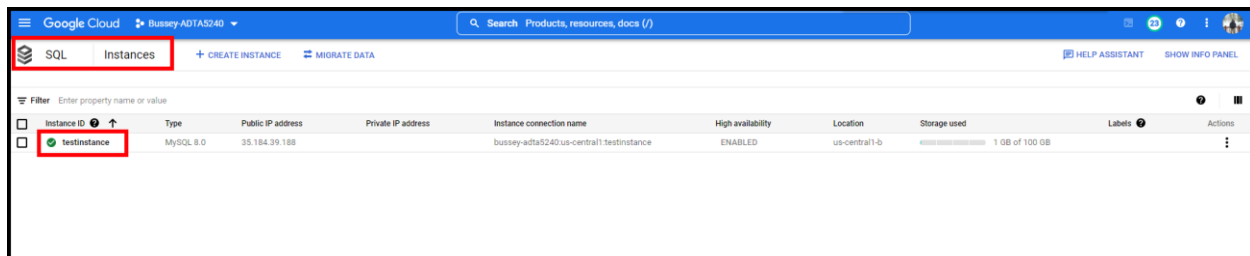
mysql> INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
-> ("Susan", "Heller", "876-888-6795", "879 Main Street", "Los Angeles", "CA", "K-8887", "All
"> good");
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO customers (fName, lName, phone, address, city, state, model, comments) values
-> ("Betsy", "Clark", "555-887-1098", "45 West 54th Ave.", "Topeka", "KS", "Z-2", "No issues");
Query OK, 1 row affected (0.01 sec)

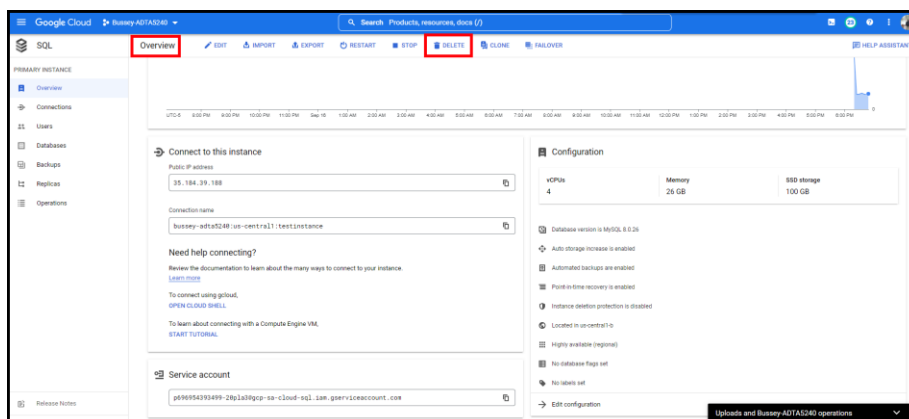
mysql> SELECT * FROM customers;
+-----+-----+-----+-----+-----+-----+-----+-----+
| fName | lName | phone | address | city | state | model | comments |
+-----+-----+-----+-----+-----+-----+-----+-----+
| Tony | Barone | 555-676-7778 | 1018 State Street | Houston | TX | A-1237 | This |
| is the best product I have ever purchased. |
| Helen | Smith | 777-879-0098 | 889 Elm Road | St. Louis | MO | H-435 | I would never |
| buy this product again! |
| Susan | Heller | 876-888-6795 | 879 Main Street | Los Angeles | CA | K-8887 | All |
| good |
| Betsy | Clark | 555-887-1098 | 45 West 54th Ave. | Topeka | KS | Z-2 | No issues |
+-----+-----+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

Step 15: Cleanup by deleting your created instance.

- Go to Cloud SQL Instances page
- Click “testinstance”




Step 16: On the overview page, click “Delete” at the top.



Step 17: Confirm the deletion by clicking “Delete” again.

Delete instance testinstance?

 This operation cannot be undone.

Deleting an instance permanently removes the instance and all its data. Any applications that connect to this instance will be affected.

Confirm deletion by typing the instance ID below: testinstance

Instance ID *
testinstance

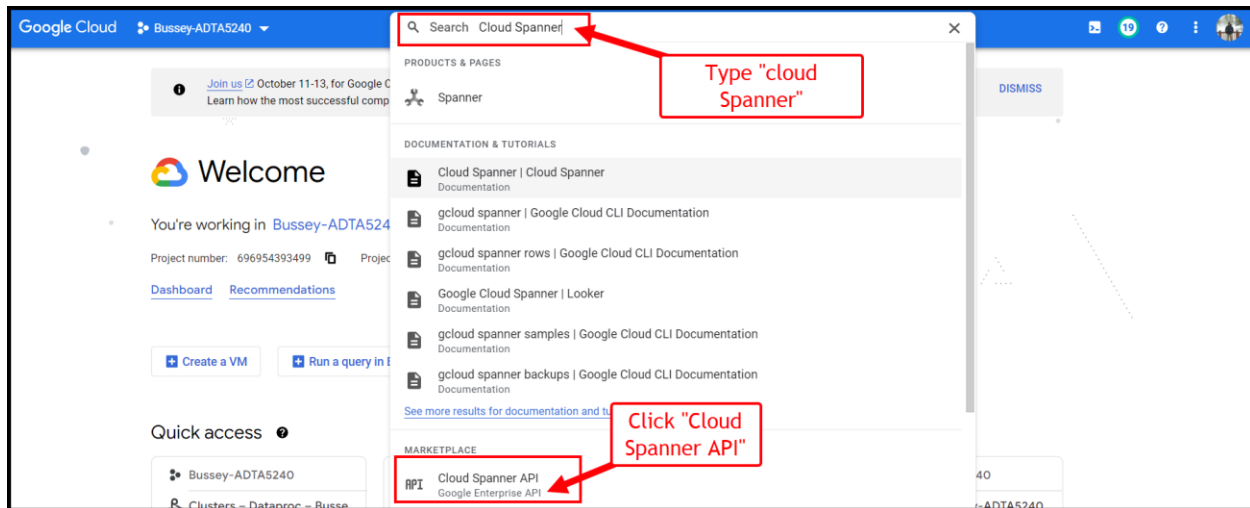
CANCEL **DELETE**

MySQL and Cloud Spanner in GCP

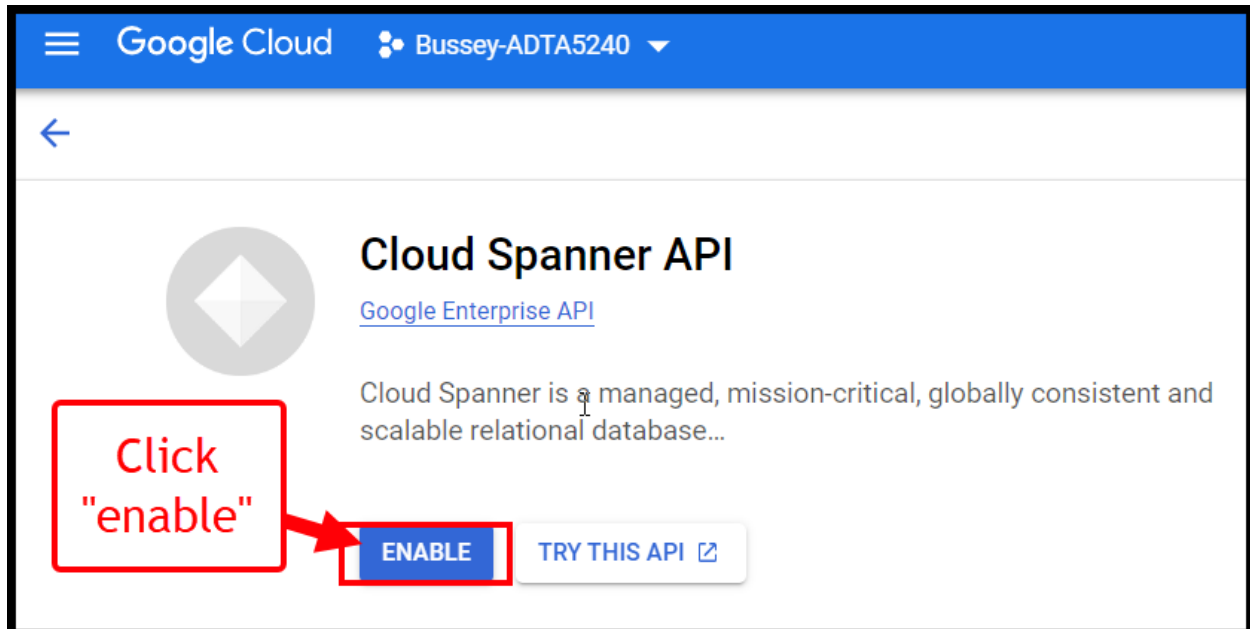
Before exploring MySQL and Cloud Spanner in GCP you will need the following:

1. A Google account or Gmail account.
2. Ability to login to Google Cloud Platform (GCP) Console.
3. An existing project in GCP.
4. Cloud Spanner API enabled.

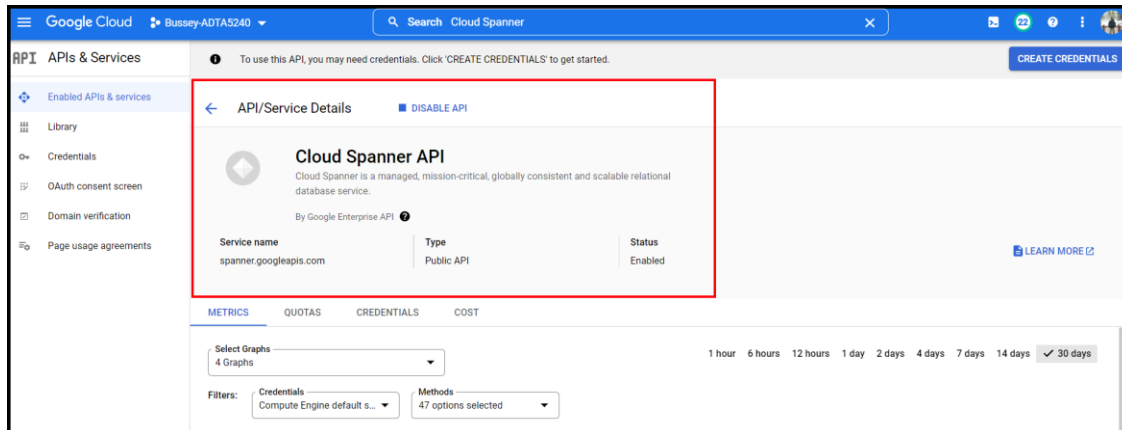
Step 1: Once you've logged into GCP console, search for "Cloud Spanner" at the top and then click the "Cloud Spanner API".



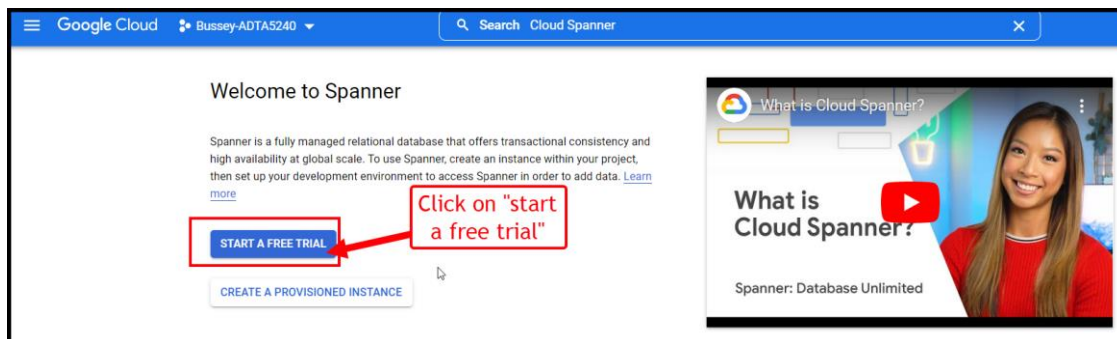
Step 2: Enable the Cloud Spanner API by clicking "enable".



Once enabled you should see this screen:

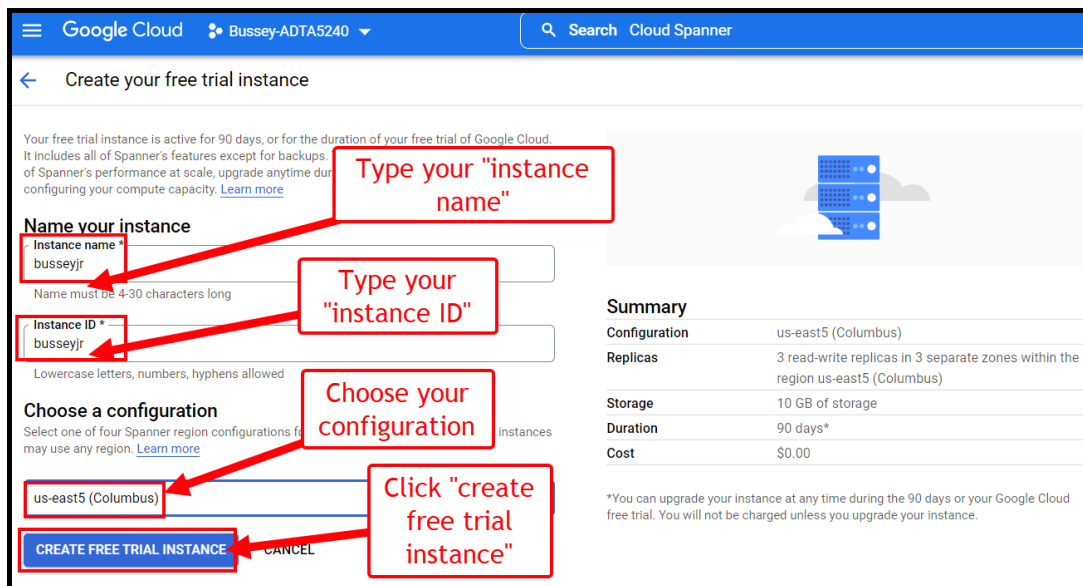


Step 3: Click on “Start a free trial”.

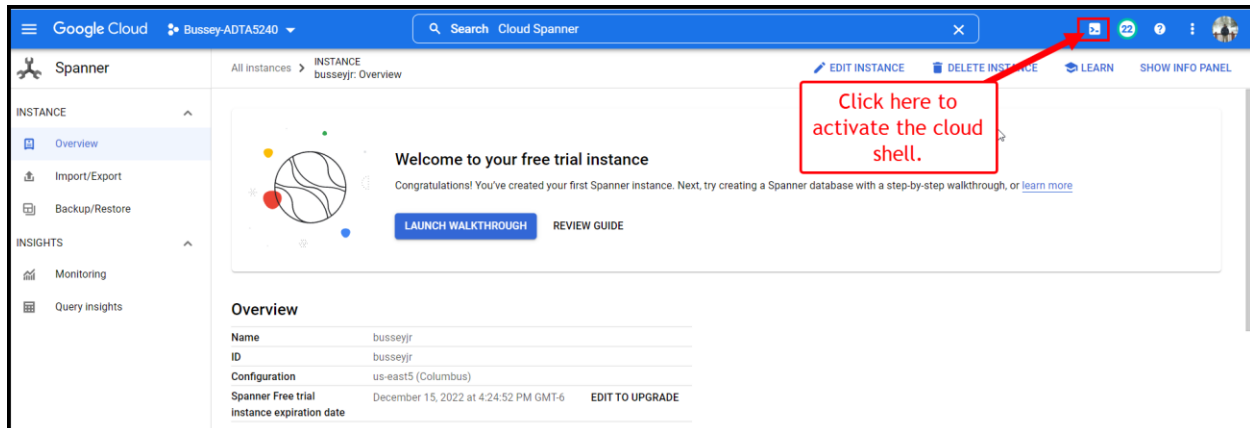


Step 4: Create your free trial instance.

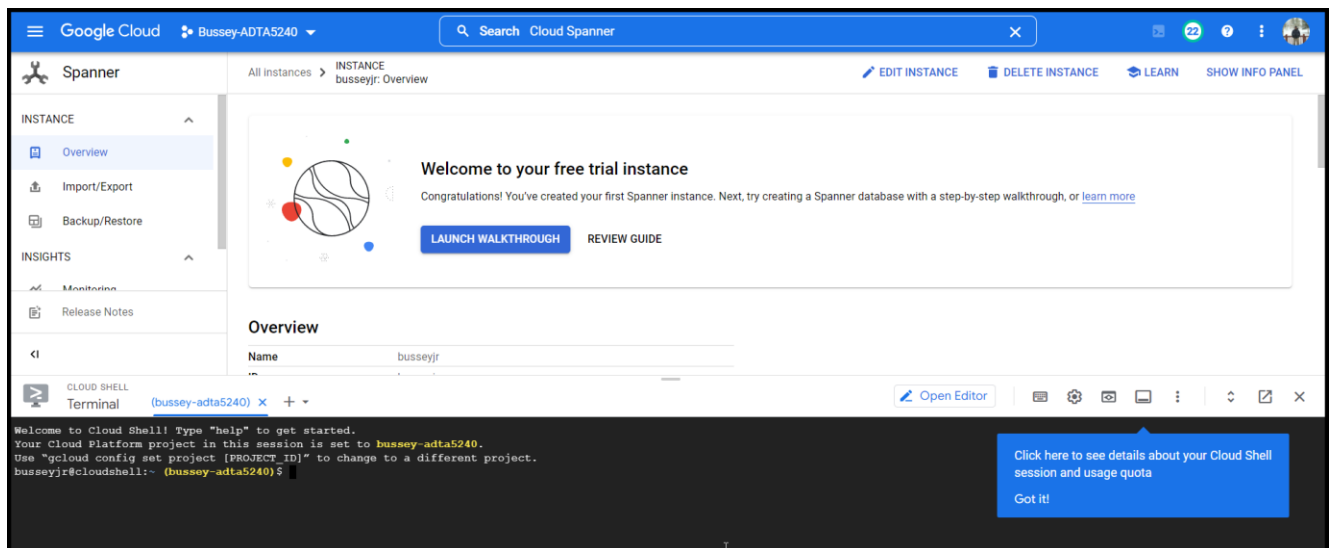
- Type your chosen “instance name” and “instance ID”.
- Choose your configuration.
- Click “create free trial instance”.



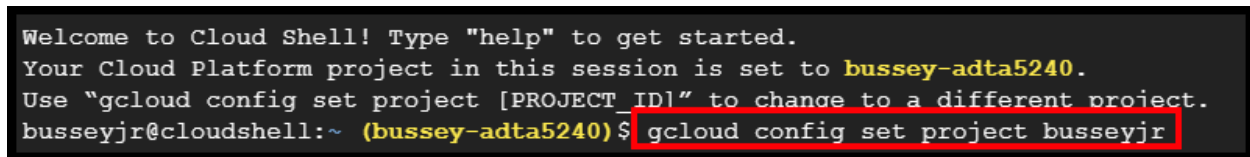
Step 5: Once you've created your free trial instance, you should be taken back to the "Welcome to your free trial instance page. Click the cloud shell icon located at the top right. This will activate the cloud shell.



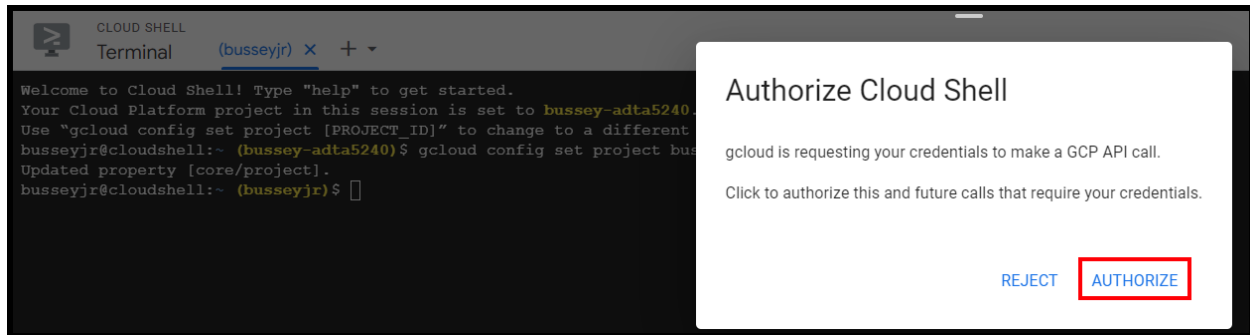
You should see this screen once you have activated the cloud shell:



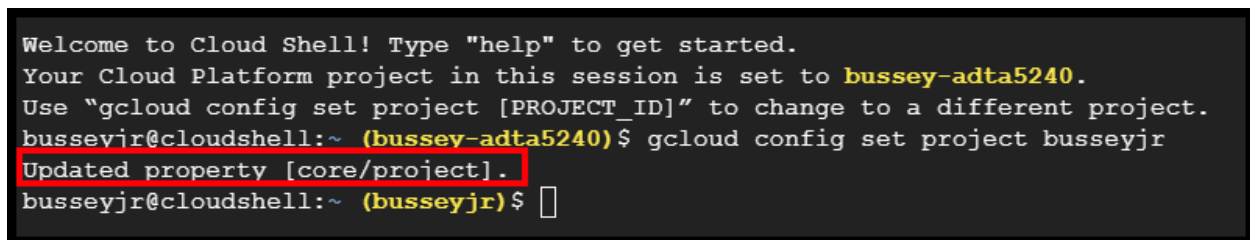
Step 6: In the cloud shell, set the default project. Type "gcloud config set project **PROJECT_ID**". Your project ID you created replaces "PROJECT_ID" in the command. See screenshot below.



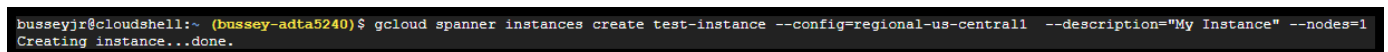
Step 7: Once the command is executed click “Authorize” in the next pop up.



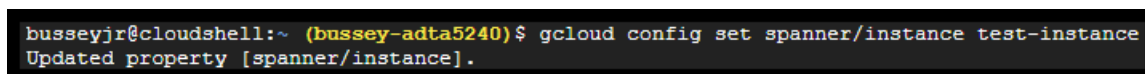
The cloud shell will then say the property is updated:



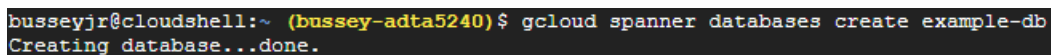
Step 8: Create an instance. Type the following into the cloud shell: “gcloud spanner instances create test-instance --config=regional-us-central1 --description=”My Instance” --nodes=1”



Step 9: Set default instance. Type the following into the cloud shell: “gcloud config set spanner/instance test-instance”



Step 10: Create a database. Type the following into the cloud shell: “gcloud spanner databases create example-db”



Step 11: Create a schema. Type the following into the cloud shell, this will create two tables:

```
gcloud spanner databases ddl update example-db \ --ddl='CREATE TABLE Singers ( SingerId INT64 NOT NULL, FirstName STRING(1024), LastName STRING(1024), SingerInfo BYTES(MAX) ) PRIMARY KEY (SingerId)'
```

```
gcloud spanner databases ddl update example-db \ --ddl='CREATE TABLE Albums ( SingerId INT64 NOT NULL, AlbumId INT64 NOT NULL, AlbumTitle STRING(MAX)) PRIMARY KEY (SingerId, AlbumId), INTERLEAVE IN PARENT Singers ON DELETE CASCADE'
```

```
busseyjr@cloudshell:~ (bussey-adta5240) $ gcloud spanner databases ddl update example-db \
--ddl='CREATE TABLE Singers ( SingerId INT64 NOT NULL, FirstName STRING(1024),
LastName STRING(1024), SingerInfo BYTES(MAX) ) PRIMARY KEY (SingerId) '
Schema updating...done.
busseyjr@cloudshell:~ (bussey-adta5240) $ gcloud spanner databases ddl update example-db \
--ddl='CREATE TABLE Albums ( SingerId INT64 NOT NULL, AlbumId INT64 NOT NULL,
AlbumTitle STRING(MAX)) PRIMARY KEY (SingerId, AlbumId), INTERLEAVE IN PARENT
Singers ON DELETE CASCADE'
Schema updating...done.
```

Step 12: Write data. Type the following into the cloud shell, this will add sample data to your database
Make sure to enter each one separately:

```
gcloud spanner rows insert --database=example-db \
```

```
--table=Singers \
```

```
--data=SingerId=1,FirstName=Marc,LastName=Richards
```

```
gcloud spanner rows insert --database=example-db \
```

```
--table=Singers \
```

```
--data=SingerId=2,FirstName=Catalina,LastName=Smith
```

```
gcloud spanner rows insert --database=example-db \
```

```
--table=Albums \
```

```
--data=SingerId=1,AlbumId=1,AlbumTitle="Total Junk"
```

```
gcloud spanner rows insert --database=example-db \
```

```
--table=Albums \
```

```
--data=SingerId=2,AlbumId=1,AlbumTitle="Green"
```

```
busseyjr@cloudshell:~ (bussey-adta5240) $ gcloud spanner rows insert --database=example-db \
--table=Singers \
--data=SingerId=1,FirstName=Marc,LastName=Richards
commitTimestamp: '2022-09-17T01:29:58.110379Z'
busseyjr@cloudshell:~ (bussey-adta5240) $ gcloud spanner rows insert --database=example-db \
--table=Singers \
--data=SingerId=2,FirstName=Catalina,LastName=Smith
commitTimestamp: '2022-09-17T01:30:30.410972Z'
busseyjr@cloudshell:~ (bussey-adta5240) $ gcloud spanner rows insert --database=example-db \
--table=Albums \
--data=SingerId=1,AlbumId=1,AlbumTitle="Total Junk"
commitTimestamp: '2022-09-17T01:30:47.228478Z'
busseyjr@cloudshell:~ (bussey-adta5240) $ gcloud spanner rows insert --database=example-db \
--table=Albums \
--data=SingerId=2,AlbumId=1,AlbumTitle="Green"
commitTimestamp: '2022-09-17T01:31:06.354075Z'
busseyjr@cloudshell:~ (bussey-adta5240) $
```

Step 13: Query data using SQL.

- Click the horizontal lines located at the top left of your screen next to “Google Cloud”.
- Click “Spanner”.
- Click “My Instance”.
- Click “example-db”.
- Click “albums”.

The screenshot shows the Google Cloud console interface. On the left, the navigation menu is open, and the 'Spanner' option is highlighted with a red box. The main content area displays the 'Spanner' service page, which includes a 'CREATE INSTANCE' button and a table of instances. The 'My Instance' entry in the table is highlighted with a red box.

| Name | ID | Configuration | Processing units | Nodes | Storage utilization | Labels |
|-------------|---------------|---------------------|------------------|-------|---------------------|--------|
| busseyjr | busseyjr | us-east5 (Columbus) | - | - | 0 B / 10 GB | |
| My Instance | test-instance | us-central1 (Iowa) | 1,000 | 1 | 0 B / 4 TB | |

The screenshot shows the 'Databases' section of the Google Cloud console. It includes a 'CREATE DATABASE' button and a table of databases. The 'example-db' entry in the table is highlighted with a red box.

| Name | Dialect | CPU utilization | Size | Version retention period |
|------------|---------------------|-----------------|------|--------------------------|
| example-db | Google Standard SQL | — | 0 B | 1 hour |

The screenshot shows the 'Tables' section of the Google Cloud console. It includes a 'CREATE TABLE' button and a table of tables. The 'Albums' entry in the table is highlighted with a red box.




| Name | Indexes | Interleaved in | Watched by |
|---------|---------|----------------|------------|
| Albums | — | Singers | |
| Singers | — | — | |

You will then see the schema that was setup in the cloud shell, see screenshot below.

Schema

| | |
|----------------|-------------------|
| Name | Albums |
| Interleaved | Singers |
| Schema updates | No recent updates |

Primary Key(s): SingerId (asc), AlbumId (asc)
Interleaved in: Singers

|  | Column | Type | Nullable | Order | Watched by |
|---|------------|-------------|----------|-------|------------|
|  | SingerId | INT64 | No | asc | |
|  | AlbumId | INT64 | No | asc | |
| | AlbumTitle | STRING(MAX) | Yes | — | |

Step 14: Go back one page and click on singers:

| Name ↑ | Indexes | Interleaved in | Watched by |
|-------------------------|---------|----------------|------------|
| Albums | — | Singers | |
| Singers | — | — | |

Step 15: Click Query located to the left.

Google Cloud Bussey-ADTA5240

Search cloud spanner

Spanner

DATABASE

Overview

Import/Export

Backup/Restore

Query

Change streams

INSIGHTS

Monitoring

Key Visualizer

Query insights

All instances > INSTANCE test-instance: Overview > GOOGLE STANDARD SQL DATABASE example-db: Overview

Overview

Database Name example-db

Database Dialect Google Standard SQL

Encryption type Google managed

Schema updates No recent updates

CPU utilization (mean)

—

Operations

Read: —/s

Write: —/s

TABLES

VIEWS

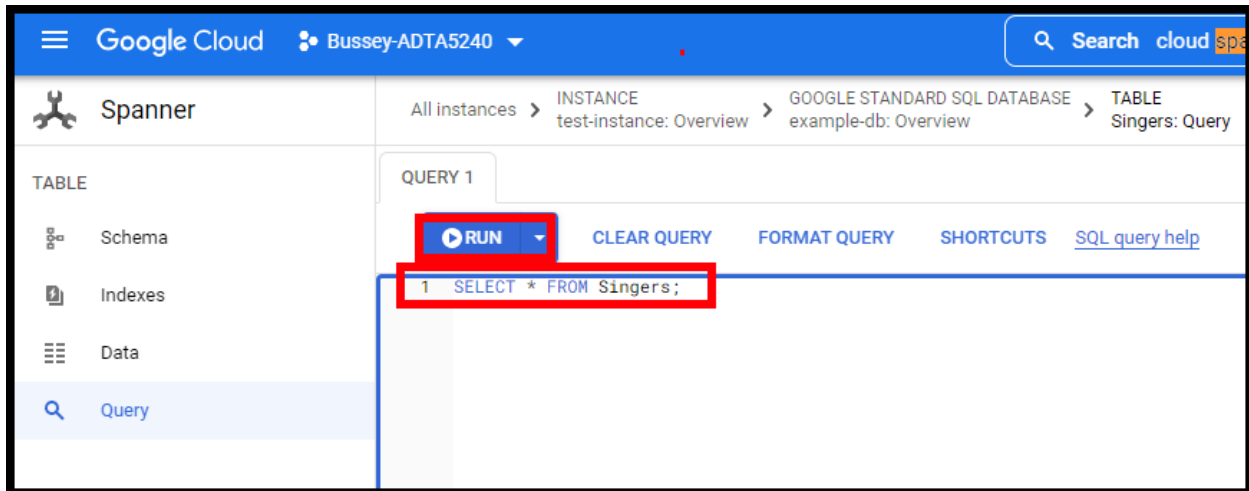
Tables are structured with rows, columns, and values, and they contain primary keys and indexes. Parent-child relationship between tables can be defined through table interleaving or foreign keys. [Learn more](#)

CREATE TABLE

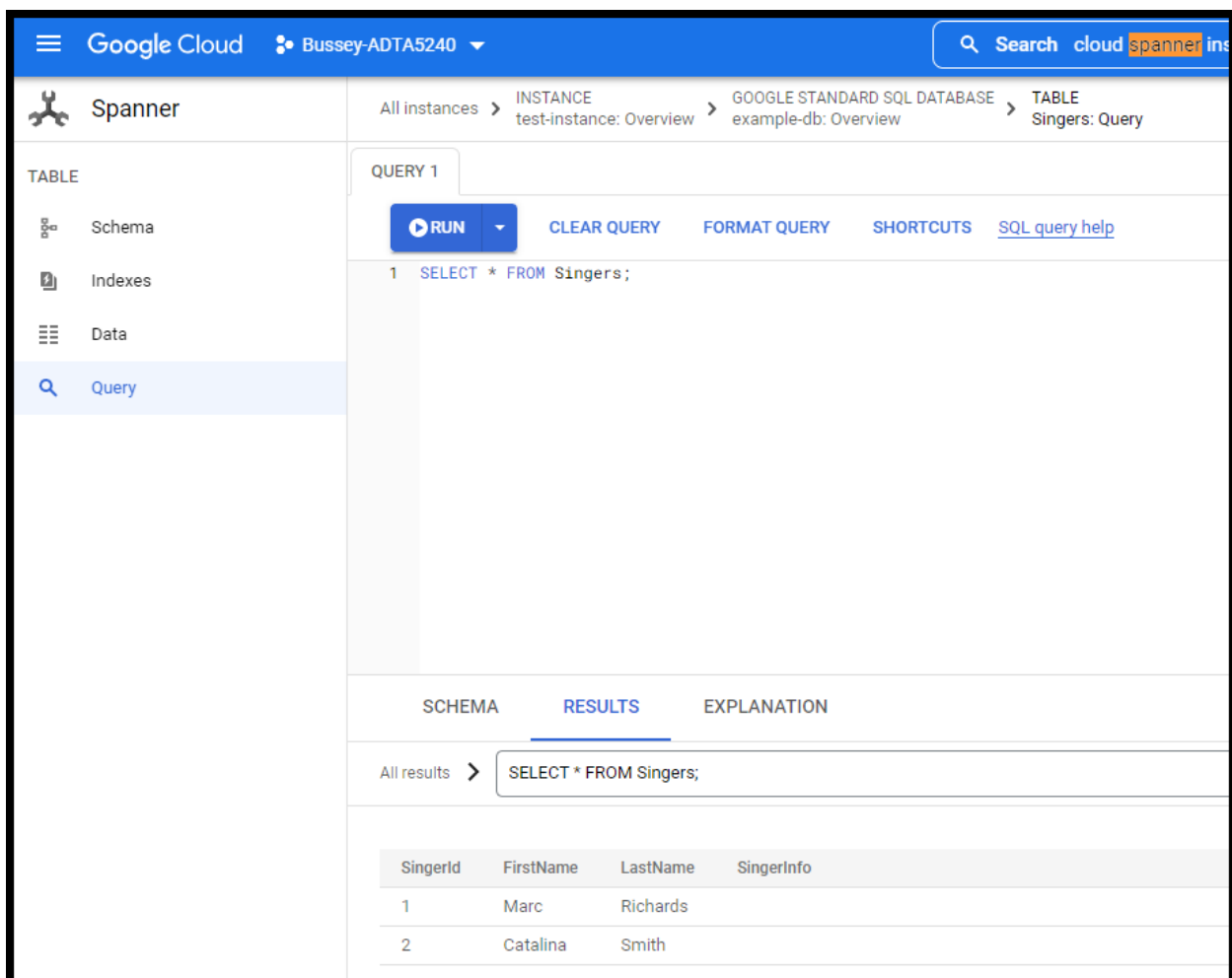
Filter Filter tables

| Name ↑ | Indexes | Interleaved in | Watched by |
|-------------------------|---------|----------------|------------|
| Albums | — | Singers | |
| Singers | — | — | |

Step 16: Type “SELECT * FROM Singers;” and then click “RUN”.

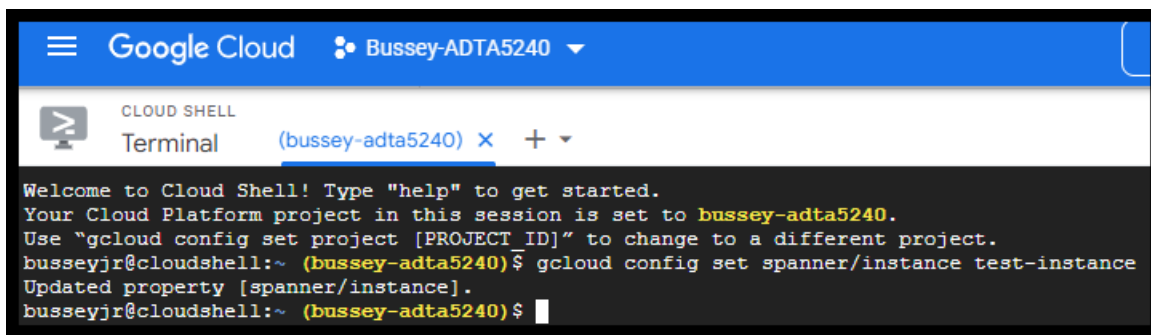
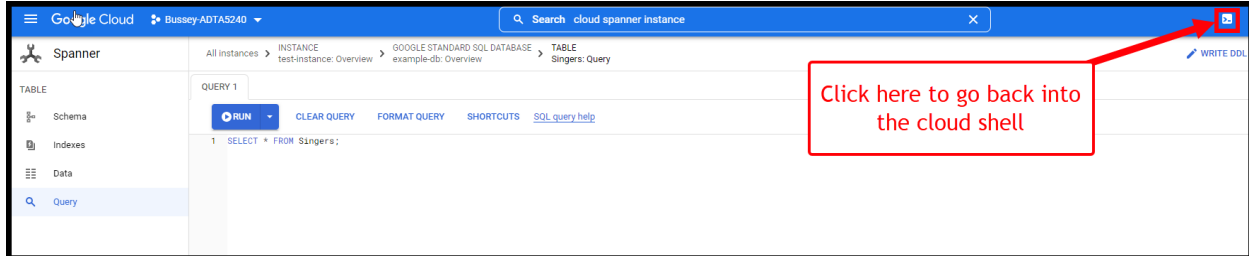


You will see that you have entered data into the table singer because Marc Richards and Catalina Smith are located at the bottom.



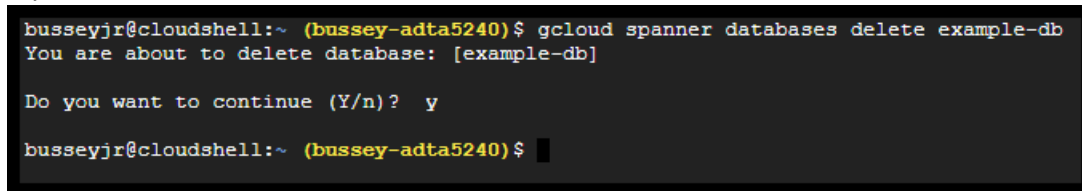
Step 17: Cleanup.

- Click the cloud shell icon located at the top right.
- Once the cloud shell is open, type the following: “gcloud config set spanner/instance test-instance”. This will avoid any additional charges to your Google Cloud account.



Step 18: Drop a database.

- Type the following command to delete your existing database: “gcloud spanner databases delete example-db”
- If you want to continue, type Y for yes and then press enter.
- If you’re asked to authorize, click authorize.



Step 19: Delete an instance.

- Type the following command to delete your instance: “gcloud spanner instances delete test-instance”

