

Module 5 ----- Assignment

Go to cloud storage and create a new bucket.

The screenshot shows the Google Cloud Platform interface for creating a new bucket. The top navigation bar includes the Google Cloud Platform logo, the project name 'Prac-Project', and a search bar with the text 'cloud storage'. The left sidebar shows the 'Cloud Storage' menu with sub-items: 'Browser', 'Monitoring', and 'Settings'. The main content area is titled 'Create a bucket' and contains two steps:

- Name your bucket**: This step prompts the user to 'Pick a globally unique, permanent name' with a link to 'Naming guidelines'. A text input field contains the example 'Ex. 'example', 'example_bucket-1', or 'example.com''. A tip below the field states: 'Tip: Don't include any sensitive information'. There is a 'LABELS (OPTIONAL)' section with a dropdown arrow and a 'CONTINUE' button.
- Choose where to store your data**: This step explains that 'This permanent choice defines the geographic placement of your data and affects cost, performance, and availability.' with a link to 'Learn more'.

On the right side of the interface, there is a 'Good to know' section with a 'Location' dropdown menu showing 'us (multi-region)' and a 'Current cost' section with an 'ESTIMATE' button.

Choose region and default storage class.

Create a bucket

•

Choose where to store your data

This permanent choice defines the geographic placement of your data and affects cost, performance, and availability. [Learn more](#)

Location type

☐ Multi-region

Highest availability across largest area

☐ Dual-region

High availability and low latency across 2 regions

☒ Region

Lowest latency within a single region

asia-east1 (Taiwan)

CONTINUE

•

Choose a default storage class for your data

A storage class sets costs for storage, retrieval, and operations. Pick a default storage class based on how long you plan to store your data and how often it will be accessed. [Learn more](#)

☒ Standard

?

Best for short-term storage and frequently accessed data

☐ Nearline

Best for backups and data accessed less than once a month

☐ Coldline

Choose access control.

- **Choose how to control access to objects**

Prevent public access

Restrict data from being publicly accessible via the internet. Will prevent this bucket from being used for web hosting. [Learn more](#)

☐ Enforce public access prevention on this bucket

Access control

☐ Uniform

Ensure uniform access to all objects in the bucket by using only bucket-level permissions (IAM). This option becomes permanent after 90 days. [Learn more](#)

☒ Fine-grained

Specify access to individual objects by using object-level permissions (ACLs) in addition to your bucket-level permissions (IAM). [Learn more](#)

CONTINUE

- **Choose how to protect object data**

Your data is always protected with Cloud Storage but you can also choose from these additional data protection options to prevent data loss. Note that object versioning and retention policies cannot be used together.

Protection tools

☒ None

☐ Object versioning (best for data recovery)

For restoring deleted or overwritten objects. To minimize the cost of storing versions, we recommend limiting the number of noncurrent versions per object and scheduling them to expire after a number of days. [Learn more](#)

☐ Retention policy (best for compliance)

For preventing the deletion or modification of the bucket's objects for a specified minimum duration of time after being uploaded. [Learn more](#)

Bucket created for Hot.

← Bucket details REFRESH HELP ASSISTANT

learning-hot-gcp

Location	Storage class	Public access	Protection
asia-east1 (Taiwan)	Standard	Subject to object ACLs	None

OBJECTS CONFIGURATION PERMISSIONS PROTECTION LIFECYCLE

Buckets > learning-hot-gcp

[UPLOAD FILES](#) [UPLOAD FOLDER](#) [CREATE FOLDER](#) [MANAGE HOLDS](#) [DOWNLOAD](#) [DELETE](#)

Filter by name prefix only Filter Filter objects and folders Show deleted data

<input type="checkbox"/>	Name	Size	Type	Created	Storage class	Last modified	Public access	Version history	Encryption	Retention expiration date
No rows to display										

Upload the given SQL file in the bucket.

← Bucket details REFRESH HELP ASSISTANT

learning-hot-gcp

Location	Storage class	Public access	Protection
asia-east1 (Taiwan)	Standard	Subject to object ACLs	None

OBJECTS CONFIGURATION PERMISSIONS PROTECTION LIFECYCLE

Buckets > learning-hot-gcp

[UPLOAD FILES](#) [UPLOAD FOLDER](#) [CREATE FOLDER](#) [MANAGE HOLDS](#) [DOWNLOAD](#) [DELETE](#)

Filter by name prefix only Filter Filter objects and folders Show deleted data

<input type="checkbox"/>	Name	Size	Type	Created	Storage class	Last modified	Public access	Version history
<input type="checkbox"/>	Sample-SQL-File-50000rows.sql	4.2 MB	application/octet-stream	Jun 2, 202...	Standard	Jun 2, 202...	Not public	—

Create two more buckets- cold and multi region.

Bucket created in Multi-region.

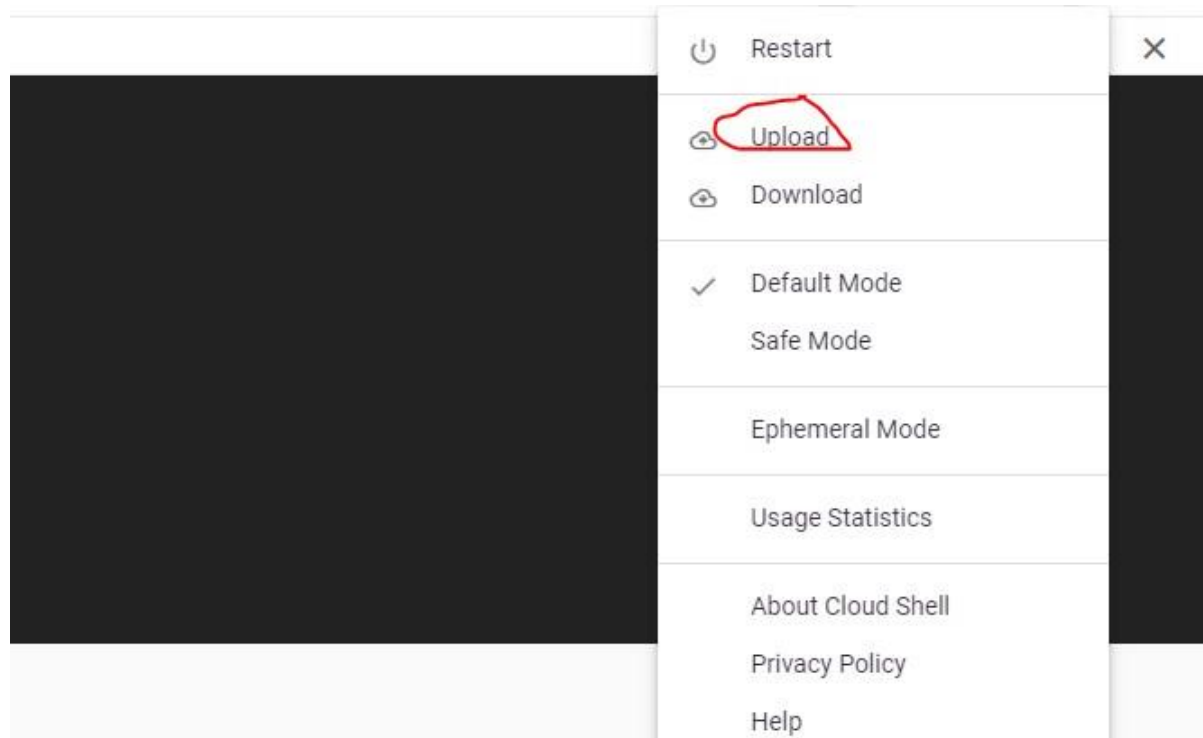
```
$gsutil mb -c standard -l us gs://learning-multi-gcp
Creating gs://learning-multi-gcp/...
$
```

Browser CREATE BUCKET DELETE REFRESH HELP ASSISTANT SHOW INFO PANEL

Filter Filter buckets

<input type="checkbox"/>	Name	Created	Location type	Location	Default storage class	Last modified	Public access	Access control
<input type="checkbox"/>	learning-hot-gcp	Jun 2, 2022, 1:08:32 PM	Region	asia-east1	Standard	Jun 2, 2022, 1:08:32 PM	Subject to object ACLs	Fine-grained
<input type="checkbox"/>	learning-multi-gcp	Jun 2, 2022, 2:31:32 PM	Multi-region	us	Standard	Jun 2, 2022, 2:31:32 PM	Subject to object ACLs	Fine-grained

Upload the SQL file in multi-region bucket from cloud shell upload option.



Upload

UPLOAD FILES OR FOLDERS FROM YOUR COMPUTER

☒ File ☐ Folder

Choose Files

Sample-SQL-File-50000rows.sql



SELECT A DESTINATION DIRECTORY

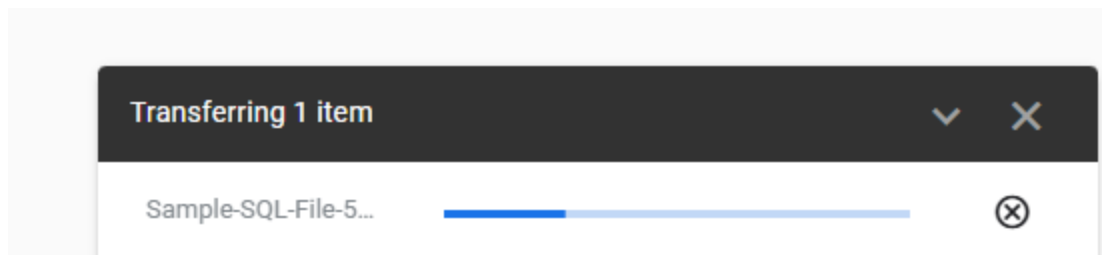
Destination Directory

/home/arpitacs0024/



Files can only be uploaded within the home directory. If the specified directory does not exist, it will be created.

[CANCEL](#) [UPLOAD](#)



Update ACL to access by all users i.e. Public access.

```
$gsutil acl ch -u Allusers:R gs://learning-multi-gcp
Updated ACL on gs://learning-multi-gcp/
$
```

Now , We need to create cold storage.

Browser CREATE BUCKET DELETE REFRESH HELP ASSISTANT SHOW INFO PANEL								
Filter Filter buckets Refresh, Updated just now								
<input type="checkbox"/> Name ↑	Created	Location type	Location	Default storage class	Last modified	Public access	Access control	
<input type="checkbox"/> learning-cold-gcp	Jun 2, 2022, 2:47:58 PM	Region	us-east1	Coldline	Jun 2, 2022, 2:48:14 PM	Public to internet	Fine-grained	
<input type="checkbox"/> learning-hot-gcp	Jun 2, 2022, 1:08:32 PM	Region	asia-east1	Standard	Jun 2, 2022, 2:45:17 PM	Public to internet	Fine-grained	
<input type="checkbox"/> learning-multi-gcp	Jun 2, 2022, 2:31:32 PM	Multi-region	us	Standard	Jun 2, 2022, 2:41:21 PM	Public to internet	Fine-grained	

Upload SQL file in buckets.

```
$gsutil cp Sample-SQL-File-50000rows.sql gs://learning-multi-gcp
Copying file://Sample-SQL-File-50000rows.sql [Content-Type=application/sql]...
- [1 files][ 4.2 MiB/ 4.2 MiB]
Operation completed over 1 objects/4.2 MiB.
$gsutil cp Sample-SQL-File-50000rows.sql gs://learning-cold-gcp
Copying file://Sample-SQL-File-50000rows.sql [Content-Type=application/sql]...
- [1 files][ 4.2 MiB/ 4.2 MiB]
Operation completed over 1 objects/4.2 MiB.
$
```

Now, Let's compare the access time from all buckets.

```
Operation completed over 1 objects/4.2 MiB.
$time curl -s -O https://storage.googleapis.com/learning-cold-gcp/Sample-SQL-File-50000rows.sql

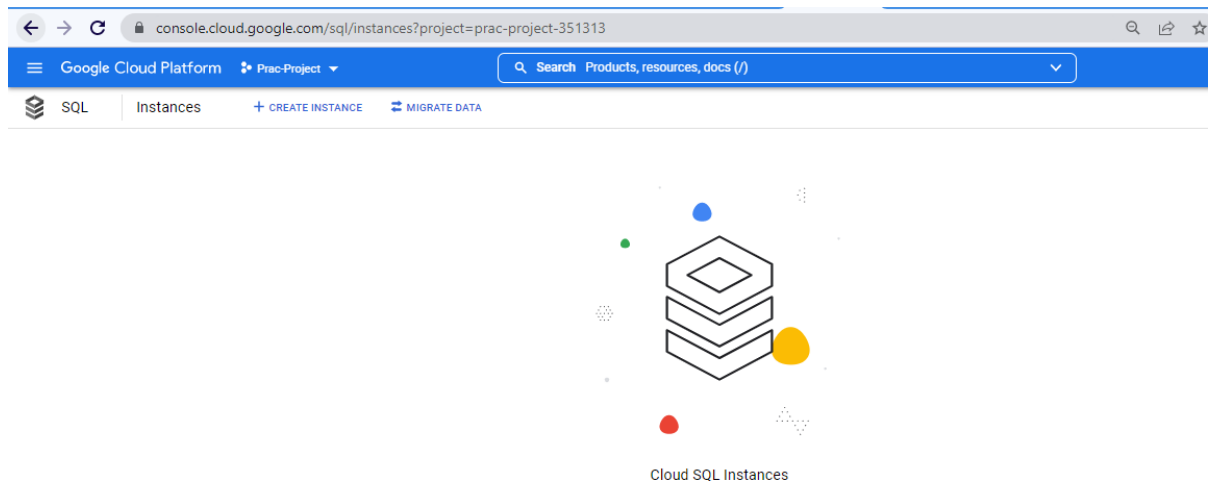
real    0m0.338s
user    0m0.017s
sys     0m0.006s
$time curl -s -O https://storage.googleapis.com/learning-hot-gcp/Sample-SQL-File-50000rows.sql

real    0m0.247s
user    0m0.013s
sys     0m0.005s
$time curl -s -O https://storage.googleapis.com/learning-multi-gcp/Sample-SQL-File-50000rows.sql

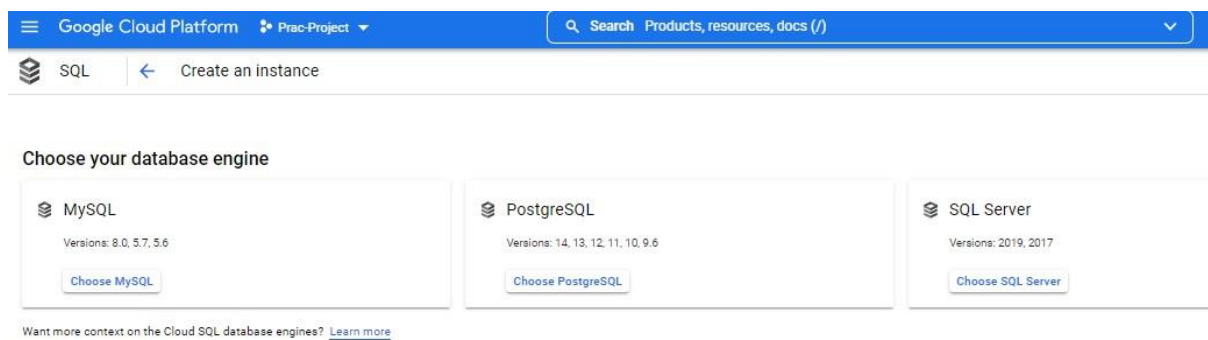
real    0m0.252s
user    0m0.016s
sys     0m0.007s
$
```

Multi-region bucket has lower latency hence we used this bucket to import this database to Cloud SQL.

Go to SQL and create a instance.



Select MySQL.



Provide the details.

Instance info

Instance ID *

demo1

Use lowercase letters, numbers, and hyphens. Start with a letter.

Password *

••••••



GENERATE

Set a password for the root user. [Learn more](#)☐ No password

Database version *

MySQL 8.0

Choose a configuration to start with

These suggested configurations will pre-fill this form as a starting point for creating an instance. You can customize as needed later.

☒ Production

Optimized for the most critical workloads. Highly available, performant, and durable.

☐ Development

Performant but not highly available, while reducing cost by provisioning less compute and storage.

▼ CONFIGURATION DETAILS

Choose region and zonal availability

For better performance, keep your data close to the services that need it. Region is permanent, while zone can be changed any time.

Region

\$540.91 per month (estimated)

That's about \$0.74 an hour.

Feature usage and traffic costs aren't included in estimate

▼ SHOW COST BREAKDOWN

Estimated performance

Network throughput (MB/s) ?	1,000 of 2,000
Disk throughput (MB/s) ?	Read: 48.0 of 240.0
	Write: 48.0 of 240.0
IOPS ?	Read: 3,000 of 15,000
	Write: 3,000 of 15,000

Choose region and zonal availability

For better performance, keep your data close to the services that need it. Region is permanent, while zone can be changed any time.

Region

us-central1 (Iowa)

Zonal availability

☐ Single zone

In case of outage, no failover. Not recommended for production.

☒ Multiple zones (Highly available)

Automatic failover to another zone within your selected region. Recommended for production instances. Increases cost.

▼ SPECIFY ZONES

Customize your instance

You can also customize instance configurations later

Machine type



Machine Type

Choose a preset or customize your own. For better performance, choose a machine type with enough memory to hold your largest table.

High memory

☒ 4 vCPU, 26 GB

☐ 8 vCPU, 52 GB

☐ 16 vCPU, 104 GB

← Create a MySQL instance

Storage type

Choice is permanent. Storage type affects performance.

☒ **SSD (Recommended)**

Most popular choice. Lower latency than HDD with higher QPS and data throughput.

☐ **HDD**

Lower performance than SSD with lower storage rates.

Storage capacity

10 - 65,536 GB. Higher capacity improves performance, up to the limits set by the machine type. Capacity can't be decreased later.

☐ 10 GB

☐ 20 GB

☒ 100 GB

☐ 200 GB

☐ Custom

☒ **Enable automatic storage increases**

If enabled, whenever you are nearing capacity, storage will be incrementally (and permanently) increased. [Learn more](#)

▼ ADVANCED ENCRYPTION OPTIONS

Connections



Choose how you want your source to connect to this instance, then define which networks are authorized to connect. [Learn more](#)

You can use the Cloud SQL Proxy for extra security with either option. [Learn more](#)

Instance IP assignment

☐ **Private IP**

Assigns an internal Google-hosted VPC IP address. Requires additional APIs and

\$540.91 per month (estimated)

That's about \$0.74 an hour.

Feature usage and traffic costs aren't included in esti

▼ SHOW COST BREAKDOWN

Estimated performance

Network throughput (MB/s) ?	1,000 of 2,000
Disk throughput (MB/s) ?	Read: 48.0 of 240.0
	Write: 48.0 of 240.0
IOPS ?	Read: 3,000 of 15,000
	Write: 3,000 of 15,000


Create a MySQL instance

Instance IP assignment

- ☐ **Private IP**
Assigns an internal, Google-hosted VPC IP address. Requires additional APIs and permissions. Can't be disabled once enabled. [Learn more](#)
- ☒ **Public IP**
Assigns an external, internet-accessible IP address. Requires using an authorized network or the Cloud SQL Proxy to connect to this instance. [Learn more](#)

Authorized networks

You can specify CIDR ranges to allow IP addresses in those ranges to access your instance. [Learn more](#)

 You have not authorized any external networks to connect to your Cloud SQL instance. External applications can still connect to the instance through the Cloud SQL Proxy. [Learn more](#)


[ADD NETWORK](#)

Backups

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+5:30).

9:30 PM — 1:30 AM 

 [ADVANCED OPTIONS](#)

Instance created.

The screenshot shows the Google Cloud Platform interface for a SQL instance named 'demo1'. The left sidebar contains a 'PRIMARY INSTANCE' section with links to Overview, Connections, Users, Databases, Backups, Replicas, and Operations. The main content area is titled 'Overview' and shows the instance name 'demo1' with a green status icon and 'MySQL 8.0'. Below this is a chart for 'CPU utilization' with a message 'No data is available for the selected time frame.' and a time range from UTC+5:30 to 10:00 AM. At the bottom, there is a 'Connect to this instance' section with a 'Public IP address' field and a 'Configuration' section.

Import the sql file that we have uploaded in bucket.

This screenshot is similar to the first one, but the 'IMPORT' button in the top navigation bar is highlighted with a red circle. The rest of the interface, including the sidebar, instance details, and the 'CPU utilization' chart, remains the same.

Create a database.

Google Cloud Platform

Prac-Project

Search Products, resources, docs (/)

Navigation menu

PRIMARY INSTANCE

Overview

Connections

Users

Databases

Backups

Replicas

Operations

Databases

All instances > demo1

demo1

MySQL 8.0

CREATE DATABASE

Name ↑	Collation	Character set	Type
db1	utf8_general_ci	utf8	User
information_schema	utf8_general_ci	utf8	System
mysql	utf8_general_ci	utf8	System
performance_schema	utf8mb4_0900_ai_ci	utf8mb4	System
sys	utf8mb4_0900_ai_ci	utf8mb4	System

Import the sql file in the instance.

Google Cloud Platform

Prac-Project

Search Products, resources,

SQL

PRIMARY INSTANCE

Overview

Connections

Users

Databases

Backups

Replicas

Operations

Import data from Cloud Storage

Source

Choose a file to import from. Make sure you have read access first. [Learn more](#)

bucket-name/file-name *

☒ learning-multi-gcp/Sample-SQL-File-50000rows.sql

BROWSE

Browse for a Cloud Storage file or enter the path to one (bucket/folder/file)

File format

☒ SQL

A plain text file with a sequence of SQL commands, like the output of mysqldump

☐ CSV

If your Cloud Storage file is a CSV file, select CSV. The CSV file should be a plain text file with one line per row and comma-separated fields.

Destination

Choose a destination database for your import. If your file already specifies the destination, this selection will be overridden. [Learn more](#)

Database (optional)

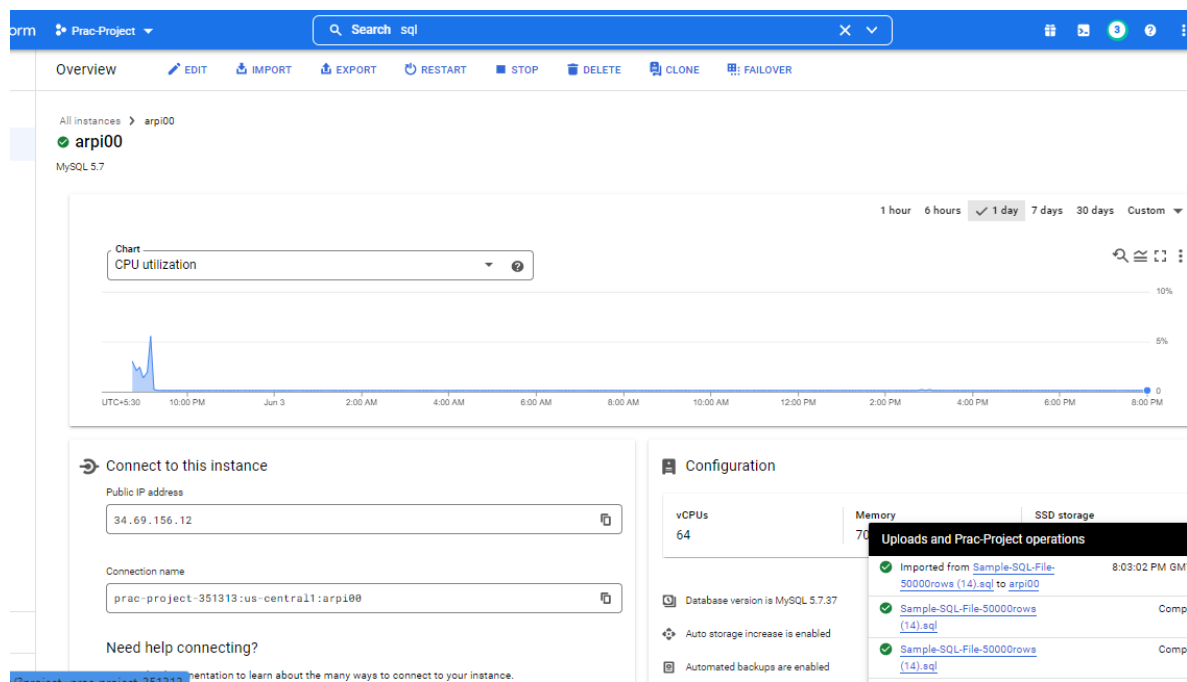
db1

When you import, a Cloud SQL service account will be granted read access to the selected file and bucket, which will be reflected in your permissions.

IMPORT

CANCEL

Import the sql file successfully.



Connecting sql using cloud shell.

```
arpitacs0024@cloudshell:~ (prac-project-351313) $ gcloud sql connect arpi00 --user=root --quiet
Allowlisting your IP for incoming connection for 5 minutes...working...
```

```
arpitacs0024@cloudshell:~ (prac-project-351313) $ gcloud sql connect arpi00 --user=root --quiet
Allowlisting your IP for incoming connection for 5 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 18484
Server version: 5.7.37-google-log (Google)

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owners.

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

mysql>
mysql>
mysql>
```

```
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| dbvb |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.20 sec)

mysql>
```