

Lab Guide for Database Services in GCP

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Day-7 Assignments

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Context

This document contains assignments to be completed as part of the hands on session for the course

Guidelines

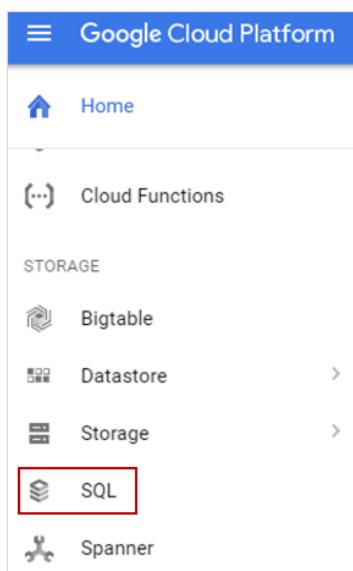
- The lab guide has been designed to give hands on experience to map the concepts learnt in the theory session with real life business oriented case studies/assignments.

Assignment 1: MySQL instance creation

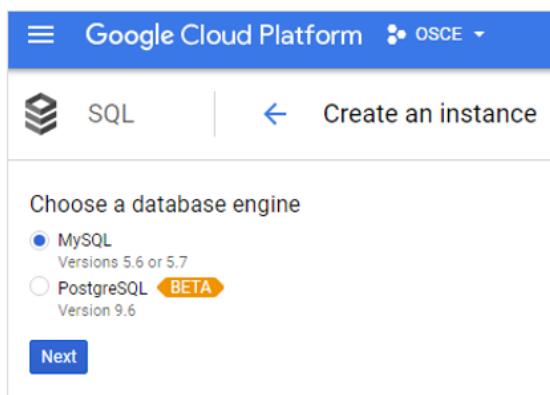
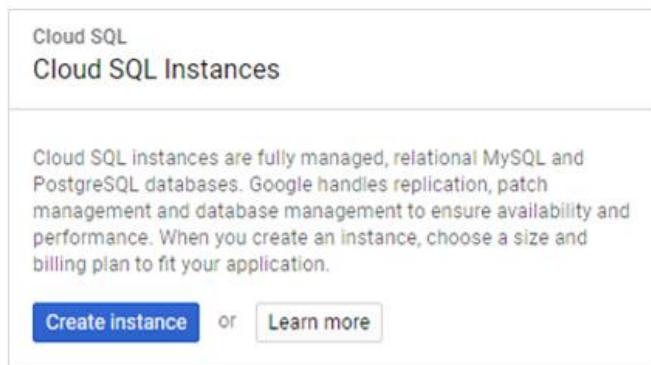
Objective: To create a SQL instance with MySQL database engine on GCP

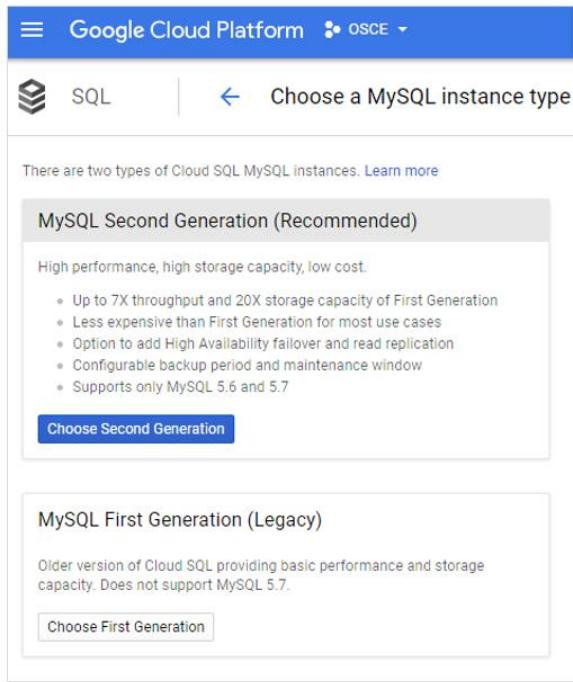
Solution:

Step 1: To access the Cloud SQL service, choose SQL under drop down menu on the GCP management console.



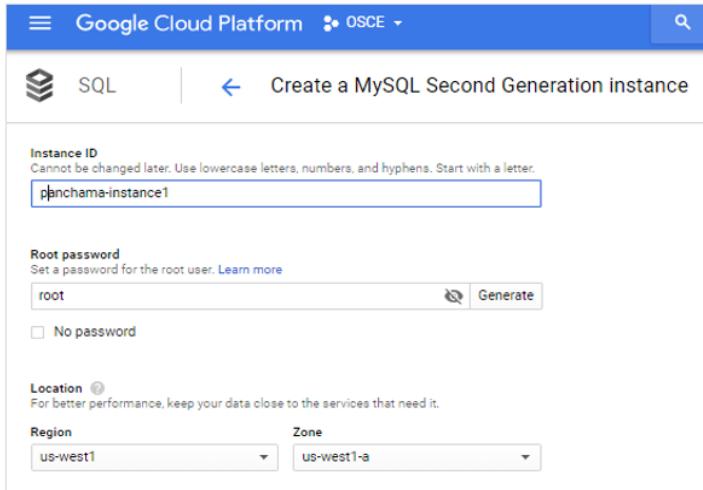
Step 2: In the navigation pane, click on Create instances. Select MySQL 5.7 second generation instance as shown in the below screen.





The screenshot shows the Google Cloud Platform interface for selecting a MySQL instance type. The top navigation bar includes the Google Cloud Platform logo, a menu icon, and the text "OSCE". Below the navigation bar, the "SQL" section is selected. A back arrow and the text "Choose a MySQL instance type" are visible. A note states: "There are two types of Cloud SQL MySQL instances. Learn more". Two options are presented: "MySQL Second Generation (Recommended)" and "MySQL First Generation (Legacy)". The "MySQL Second Generation" section is detailed with the following text: "High performance, high storage capacity, low cost." and a bulleted list: "Up to 7X throughput and 20X storage capacity of First Generation", "Less expensive than First Generation for most use cases", "Option to add High Availability failover and read replication", "Configurable backup period and maintenance window", and "Supports only MySQL 5.6 and 5.7". A blue "Choose Second Generation" button is present. The "MySQL First Generation (Legacy)" section is described as "Older version of Cloud SQL providing basic performance and storage capacity. Does not support MySQL 5.7." and contains a "Choose First Generation" button.

Step 3: Provide an appropriate instance name and set the root password. Choose your region and zone locations nearby to majority of your customers.



The screenshot shows the Google Cloud Platform interface for creating a MySQL Second Generation instance. The top navigation bar includes the Google Cloud Platform logo, a search bar, and a dropdown menu labeled 'OSCE'. The main title is 'Create a MySQL Second Generation instance'. On the left, there's a sidebar with a 'SQL' icon. The main form fields are:

- Instance ID:** A text input field containing 'planchama-instance1'. A note says: 'Cannot be changed later. Use lowercase letters, numbers, and hyphens. Start with a letter.'
- Root password:** A text input field containing 'root'. To its right are 'Generate' and 'No password' checkboxes.
- Location:** A section with 'Region' set to 'us-west1' and 'Zone' set to 'us-west1-a'. A note says: 'For better performance, keep your data close to the services that need it.'

Step 4: Various options are provided to change the configuration in terms of storage, machine type, backup and maintenance window etc. Explore them.

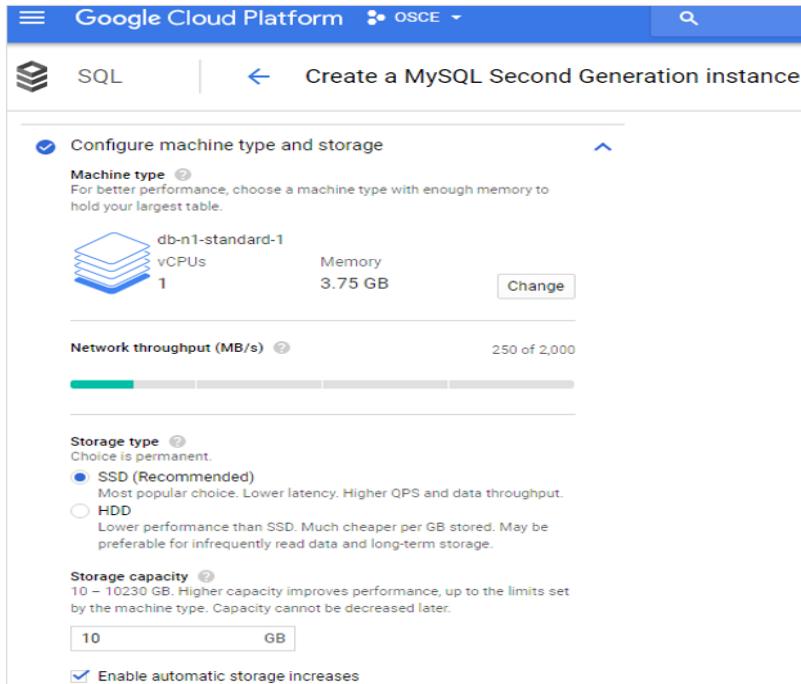
Configuration options

- Choose database version
MySQL 5.7
- Configure machine type and storage
Machine type is db-n1-standard-1. Storage type is SSD. Storage size is 10 GB, and will automatically scale as needed.
- Enable auto backups and high availability
Automatic backups enabled. Binary logging enabled. Not highly available.
- Authorize networks
No networks authorized.
- Add Cloud SQL flags
No flags set.
- Set maintenance schedule
Updates may occur any day of the week. Cloud SQL chooses the maintenance timing.
- Add Cloud SQL labels
No labels set.

[Hide configuration options](#)

Create Cancel

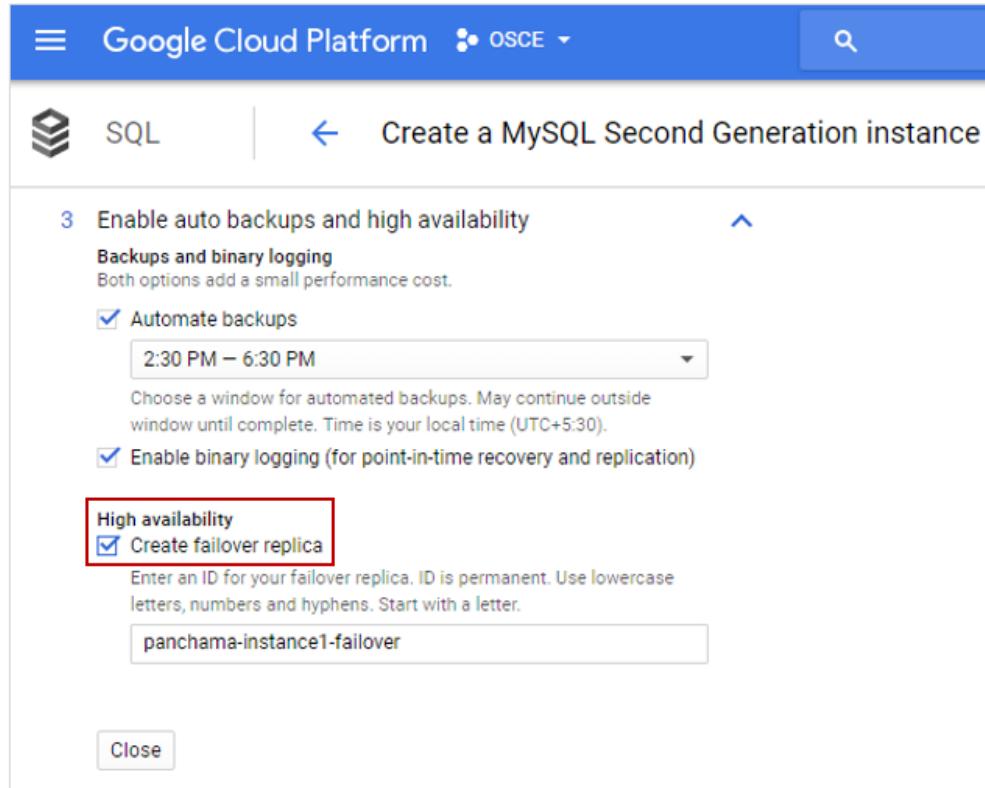
Step 5: Select appropriate machine type and storage based on Panchama's requirements. As one of Panchama's requirement is having low latency, select SSD as storage types instead of HDDs.



The screenshot shows the 'Create a MySQL Second Generation instance' page in the Google Cloud Platform SQL section. The 'Configure machine type and storage' step is selected. Under 'Machine type', a db-n1-standard-1 instance is chosen with 1 vCPU and 3.75 GB of memory. The 'Network throughput (MB/s)' is set to 250 of 2,000. Under 'Storage type', 'SSD (Recommended)' is selected. 'Storage capacity' is set to 10 GB. The 'Enable automatic storage increases' checkbox is checked. A large watermark reading 'InfoLab' is overlaid on the page.

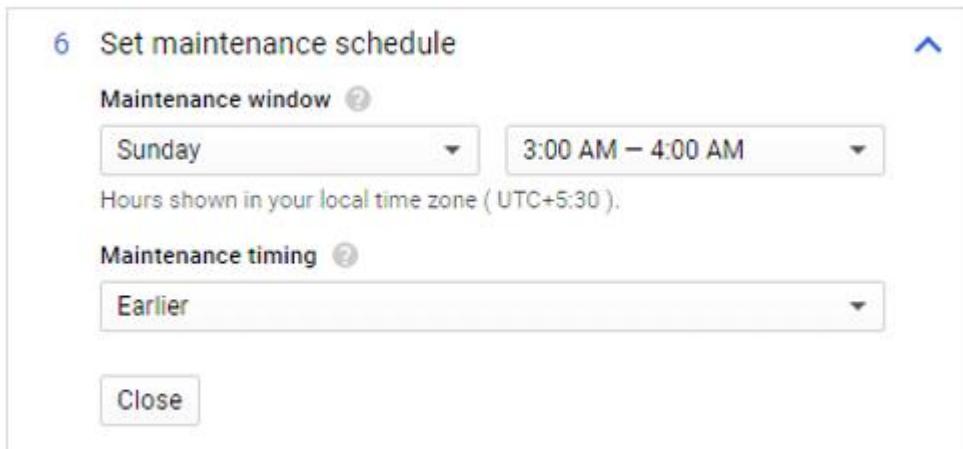
Step 6: The power of using a fully managed service by GCP is reducing administrative task. One of them is automated backups. Choose a 4-hour window slot from the drop down. Check the 'Enable binary logging' box to ensure replication and recovery is smooth for a point in time due to some failures.

It also gives an option to create fail over replicas to make it highly available. Select the option in case of Disaster recovery plan and Multi zone deployment requirement. Usually fail over replicas takes the base instance name and appends a fail over word to ease billing process.

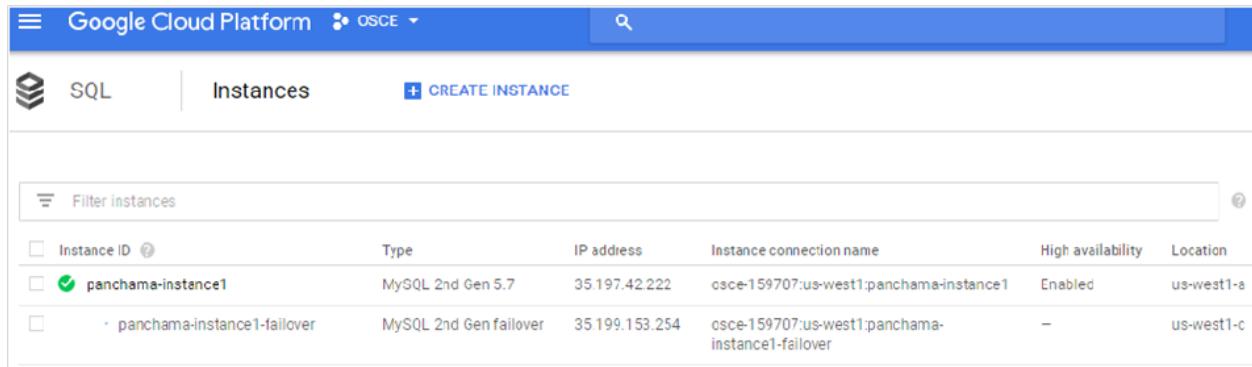


The screenshot shows the Google Cloud Platform interface for creating a MySQL Second Generation instance. The top navigation bar includes the Google Cloud Platform logo, a user dropdown (osce), and a search bar. Below the navigation, the 'SQL' section is selected, and the sub-section 'Create a MySQL Second Generation instance' is shown. The main content area is titled '3 Enable auto backups and high availability'. It contains two sections: 'Backups and binary logging' and 'High availability'. Under 'Backups and binary logging', there are two checked checkboxes: 'Automate backups' (set to 2:30 PM – 6:30 PM) and 'Enable binary logging (for point-in-time recovery and replication)'. Under 'High availability', there is a checked checkbox 'Create failover replica' and a text input field containing 'panchama-instance1-failover'. A 'Close' button is located at the bottom left of the modal.

Step 7: Select an appropriate 1-hour maintenance window according to project needs. Or leave it with any to allow GCP to choose the same. Earlier in the drop down gets updates for test instance on new version before even getting updates for production instances.



Step 8: It takes a couple of mins and both master database instance and fail over instance will be up. Observe the fail over instance being deployed in a different zone other than the master.



The screenshot shows the Google Cloud Platform (GCP) SQL Instances page. At the top, there's a blue header bar with the GCP logo, the project name 'osce', and a search icon. Below the header, the 'SQL' tab is selected, and the 'Instances' tab is active. A 'CREATE INSTANCE' button is visible. A 'Filter instances' input field is present. The main table lists two instances:

| Instance ID | Type | IP address | Instance connection name | High availability | Location |
|--|------------------------|----------------|--|-------------------|------------|
| <input checked="" type="checkbox"/> panchama-instance1 | MySQL 2nd Gen 5.7 | 35.197.42.222 | osce-159707:us-west1:panchama-instance1 | Enabled | us-west1-a |
| <input type="checkbox"/> panchama-instance1-failover | MySQL 2nd Gen failover | 35.199.153.254 | osce-159707:us-west1:panchama-instance1-failover | - | us-west1-c |

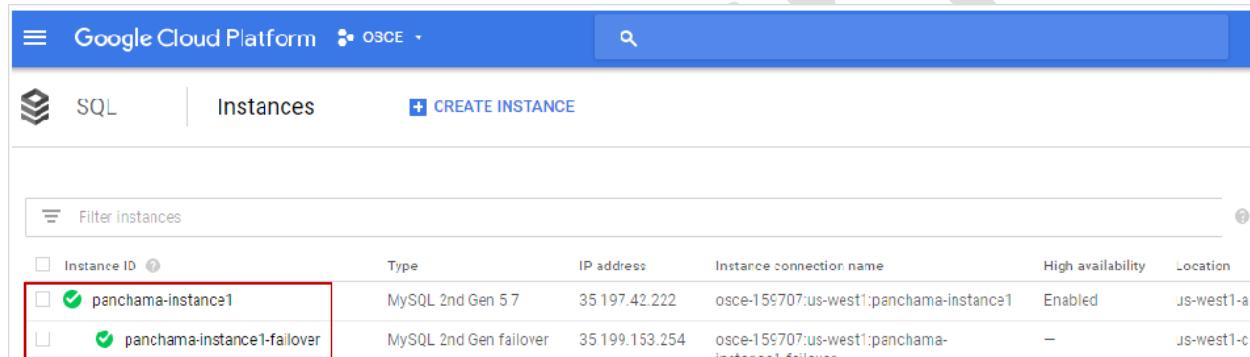
Summary of this assignment: In this assignment, you have learnt to create a MySQL instance in GCP.

Assignment 2: Interact with MySQL instance through GCP

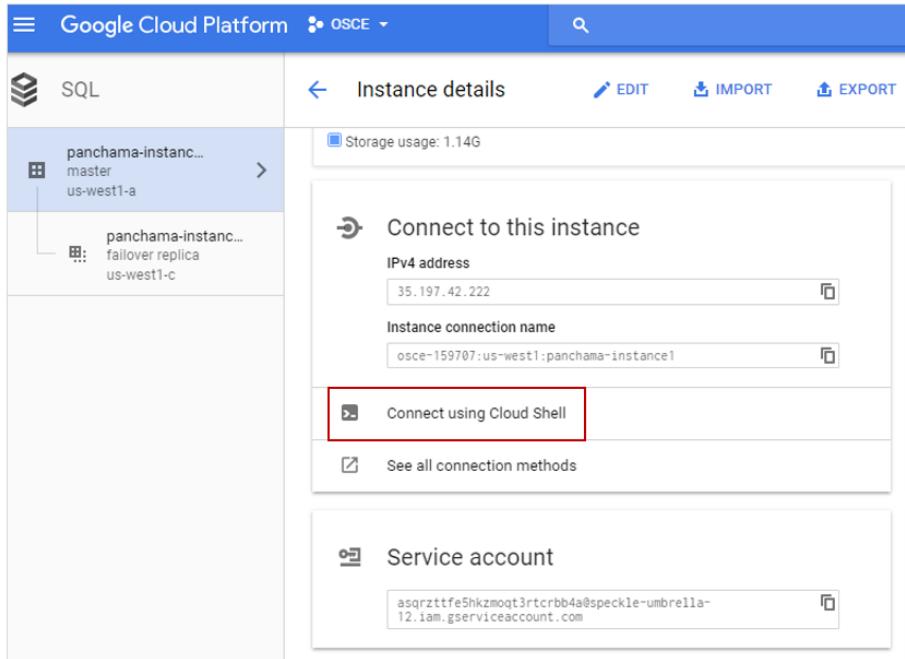
Objective: To connect, load, and interact with MySQL instance

Solution:

Step 1: Select the main instance that is running and click on Connect using Cloud Shell option. This will open up a cloud shell with the command to connect auto typed

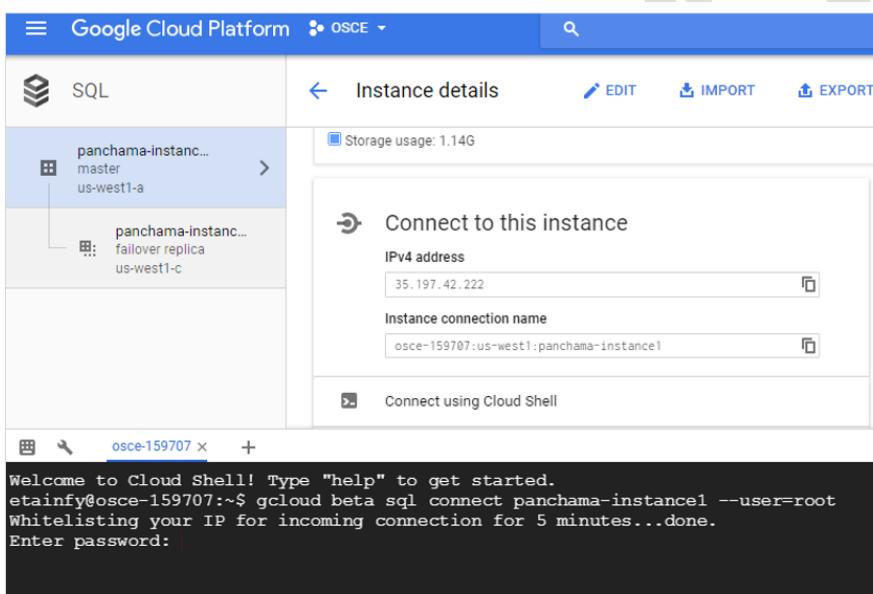
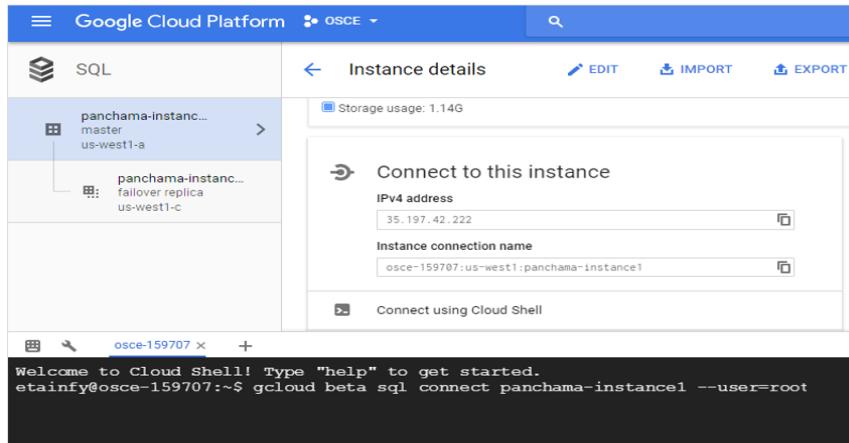


| Instance ID | Type | IP address | Instance connection name | High availability | Location |
|--|------------------------|----------------|--|-------------------|------------|
| <input checked="" type="checkbox"/> panchama-instance1 | MySQL 2nd Gen 5.7 | 35.197.42.222 | osce-159707:us-west1:panchama-instance1 | Enabled | us-west1-a |
| <input type="checkbox"/> panchama-instance1-failover | MySQL 2nd Gen failover | 35.199.153.254 | osce-159707:us-west1:panchama-instance1-failover | - | us-west1-c |

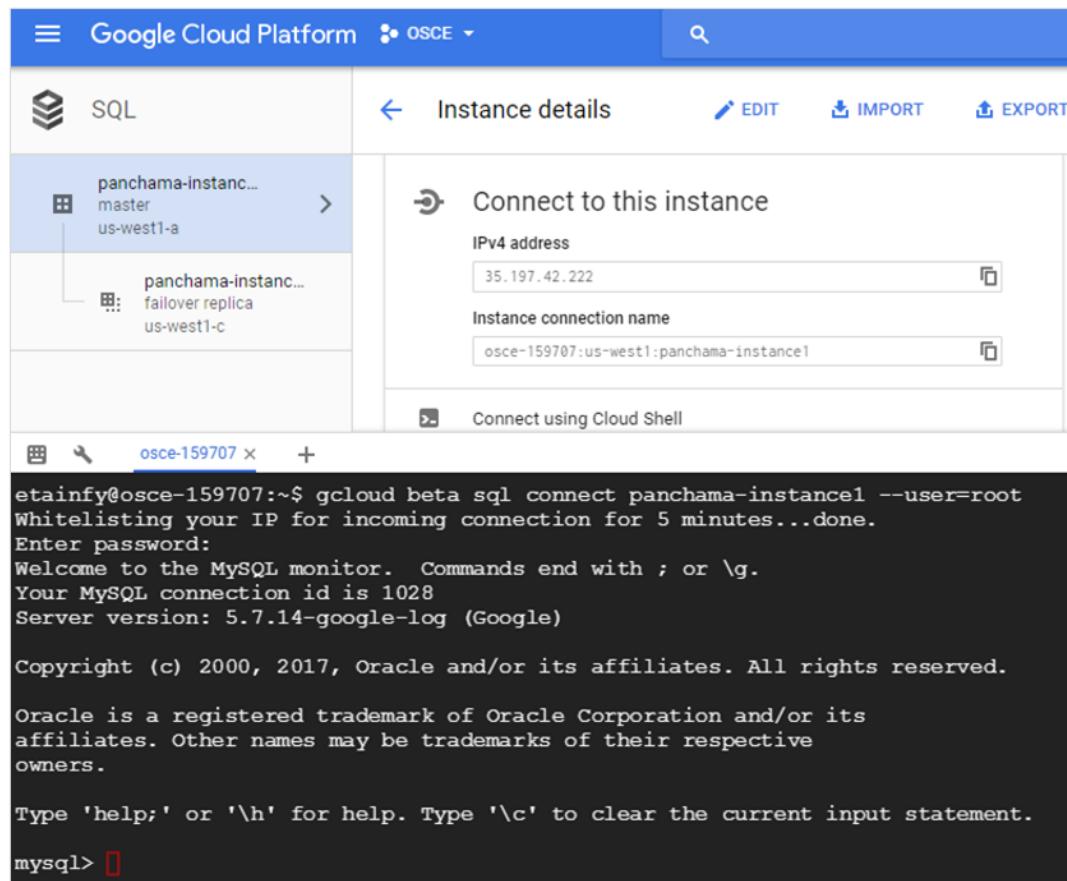


The screenshot shows the Google Cloud Platform SQL instance details page for 'panchama-instance1'. The left sidebar lists two instances: 'panchama-instance1-a' (master) and 'panchama-instance1-c' (failover replica). The main panel displays 'Instance details' for 'panchama-instance1-a'. It includes a summary card with 'Storage usage: 1.14G', a 'Connect to this instance' section with an IPv4 address (35.197.42.222) and instance connection name (osce-159707:us-west1:panchama-instance1), and a 'Service account' section showing a service account email (asqrzttfe5hkzmoqt3rtcrbb4a@speckle-umbrella-12.iam.gserviceaccount.com). A red box highlights the 'Connect using Cloud Shell' button.

Step 2: It will whitelist the IP for incoming connection and prompt to provide the root password. Provide the same to enter MySQL prompt



Step 3: MySQL prompt shows that the connection is successful and let us now interact with the DB by loading data and querying the same. Create a database & use it for any interactions. Create necessary tables and load the data.



The screenshot shows the Google Cloud Platform SQL interface. On the left, there's a tree view of database instances under the 'panchama-instance1' master instance in 'us-west1-a'. One of the child nodes is 'failover replica' in 'us-west1-c'. On the right, the 'Instance details' panel is open for the master instance. It includes fields for connecting via IPv4 address (35.197.42.222) and instance connection name (osce-159707:us-west1:panchama-instance1). Below this, there's a 'Connect using Cloud Shell' button. At the bottom of the interface, a terminal window titled 'osce-159707' is displayed, showing a successful MySQL connection:

```

etainfy@osce-159707:~$ gcloud beta sql connect panchama-instance1 --user=root
Whitelisting your IP for incoming connection for 5 minutes...done.
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 1028
Server version: 5.7.14-google-log (Google)

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

mysql> 

```

Step 4: Query the tables using select statement. Querying is the same way that normal MySQL interaction happens through command prompt or MySQL workbench third party external tool. Google Cloud shell offers an easiest way to interact with the DB.

```
mysql> CREATE DATABASE Panchama;
Query OK, 1 row affected (0.13 sec)

mysql> USE Panchama;
Database changed
mysql> CREATE TABLE customers (guestName VARCHAR(255), country VARCHAR(255),
-> entryID INT NOT NULL AUTO_INCREMENT, PRIMARY KEY(entryID));
Query OK, 0 rows affected (0.14 sec)

mysql>     INSERT INTO customers (guestName, country) values ("Poorvi", "India");
Query OK, 1 row affected (0.12 sec)

mysql>     INSERT INTO customers (guestName, country) values ("Samuel", "US");
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO customers (guestName, country) values ("Chao sun", "Japan");
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO customers (guestName, country) values ("Pranav", "India");
Query OK, 1 row affected (0.13 sec)

mysql>
```

```
mysql> select * from customers;
+-----+-----+-----+
| guestName | country | entryID |
+-----+-----+-----+
| Poorvi   | India   |    1   |
| Samuel   | US      |    2   |
| Chao sun | Japan   |    3   |
| Pranav   | India   |    4   |
+-----+-----+-----+
4 rows in set (0.12 sec)

mysql>
```

Summary of this assignment: In this assignment, you have learnt to interact with MySQL instance in GCP.

Additional Assignments:

- 1) [Datastore: Qwik Start](#)
- 2) [BigQuery: Qwik Start - Command Line](#)
- 3) [Using BigQuery in the GCP Console](#)
- 4) [Exploring Your Ecommerce Dataset with SQL in Google BigQuery](#)