

Project id: cdsds561-project-1  
Bucket Name: hw2nirbhgsutil , gcf-check-files  
Bucket-2 Name:hw4nirbhgsutil  
Directory Name: test-dir , gcf-check-files/test-dir  
Github Link:[CDS-DS-561-hw2/hw10 at master · nirbhay221/CDS-DS-561-hw2 \(github.com\)](https://github.com/nirbhay221/CDS-DS-561-hw2/tree/master)  
Topic name : projects/cdsds561-project-1/topics/hw3nirbhgsutil  
Topic Id: hw3nirbhgsutil  
Subscription Id: hw3nirbhgsutil-sub  
Service Account email for pub sub:  
pubsubserviceacc-hw3-nirbh@cdsds561-project-1.iam.gserviceaccount.com  
Service Account for pub sub: pubsubServiceAcc-hw3-nirbh  
Service Account for SQL:  
cloud-sql-authorize-vm@cdsds561-project-1.iam.gserviceaccount.com  
Reserved IP : 34.75.102.252  
Sql database instance: my-database  
Sql database: First-Trial , Second-Trial  
Sql Tables : Clients, main\_table, error\_logs.  
Vm-instance : 5 - directory - model-1 - main.py , main-1.py , 6 - main.py , main-1.py,  
Server VM - instance wser1, wser2, instance5 -> vm-check ->http-client.py  
Service account for kubernetes for logging, pubsub and cloud storage :  
[pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com](mailto:pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com)  
Vm-instances - vm-instance - 5 contains the http-client.py and the vm-instance-6 contains the app-2.py

#### **Deployment Manager Details:**

Deployed Instance: my-database  
Database Instance: my-database-instance  
Database Name: Fourth-Trial  
Bucket : hw8nirbhgsutil  
Service Account:  
[k8s-service-account@cdsds561-project-1.iam.gserviceaccount.com](mailto:k8s-service-account@cdsds561-project-1.iam.gserviceaccount.com)  
Topic Name: my-pubsub-topic  
Subscription Name: my-pubsub-sub  
Vm-instance-1: my-vm  
Vm-instance-2: my-vm-2

Now for the following homework when we run the following code we get the following resources deployed as follows :

```
C:\Users\nirbh\AppData\Local\Google\Cloud SDK>gcloud deployment-manager deployments create my-database --config vm-instance-check-21.yaml
The fingerprint of the deployment is b'Y3DI6PyCrRR11K43utr7Tg=='
Waiting for create [operation-1702051785822-60c01d0155238-d225e84e-986d34e3]...done.
Create operation operation-1702051785822-60c01d0155238-d225e84e-986d34e3 completed successfully.

NAME          TYPE           STATE    ERRORS  INTENT
bind-iam-policy gcp-types/cloudresourcemanager-v1:v  COMPLETED  [] 
                  virtual.projects.iamMemberBinding
cloud-sql-admin-binding gcp-types/cloudresourcemanager-v1:v  COMPLETED  []
                          virtual.projects.iamMemberBinding
hw8nirbhgsutil storage.v1.bucket      COMPLETED  []
k8s-service-account iam.v1.serviceAccount  COMPLETED  []
logging-admin-binding gcp-types/cloudresourcemanager-v1:v  COMPLETED  []
                      virtual.projects.iamMemberBinding
my-database-db     gcp-types/sqladmin-v1beta4:database  COMPLETED  []
                   s
my-database-instance gcp-types/sqladmin-v1beta4:instance  COMPLETED  []
                   s
my-database-replica-0 gcp-types/sqladmin-v1beta4:instance  COMPLETED  []
                   s
my-pubsub-topic   pubsub.v1.topic      COMPLETED  []
my-vm            compute.v1.instance  COMPLETED  []
my-vm-2          compute.v1.instance  COMPLETED  []
object-admin-binding gcp-types/cloudresourcemanager-v1:v  COMPLETED  []
                     virtual.projects.iamMemberBinding
pubsub-subscription pubsub.v1.subscription  COMPLETED  []
storage-admin-binding gcp-types/cloudresourcemanager-v1:v  COMPLETED  []
                     virtual.projects.iamMemberBinding
```

Deployment with Firewall rule:

```

Waiting for create [operation-1702067282346-60c056bbf81f6-be3fda79-105b5e5d]...done.
Create operation operation-1702067282346-60c056bbf81f6-be3fda79-105b5e5d completed successfully.

NAME                      TYPE
STATE        ERRORS  INTENT
allow-http-fw      compute.v1.firewall
COMPLETED  []
bind-iam-policy    gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
COMPLETED  []
cloud-sql-admin-binding  gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
COMPLETED  []
hw8nirbhgsutil    storage.v1.bucket
COMPLETED  []
k8s-service-account  iam.v1.serviceAccount
COMPLETED  []
logging-admin-binding  gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
COMPLETED  []
my-database-db      gcp-types/sqladmin-v1beta4:databases
COMPLETED  []
my-database-instance  gcp-types/sqladmin-v1beta4:instances
COMPLETED  []
my-database-replica-0  gcp-types/sqladmin-v1beta4:instances
COMPLETED  []
my-pubsub-topic     pubsub.v1.topic
COMPLETED  []
my-vm              compute.v1.instance
COMPLETED  []
my-vm-2            compute.v1.instance
COMPLETED  []
object-admin-binding  gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
COMPLETED  []
pubsub-subscription  pubsub.v1.subscription
COMPLETED  []
storage-admin-binding  gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
COMPLETED  []

```

## Deployment Manager:

The screenshot shows the Google Cloud Deployment Manager interface. At the top, there's a navigation bar with 'Google Cloud' and a dropdown for 'CDSDS561 Project 1'. A search bar is also present. Below the navigation, there's a toolbar with icons for trash, copy, edit, and info panel, along with a count of 1 deployment.

The main area is titled 'Deployments' and shows a single deployment entry:

- Name:** my\_database
- Created on:** 12 minutes ago
- Last modified:** 3 minutes ago
- Labels:** None

There are also buttons for 'DEPLOY MARKETPLACE SOLUTION', 'STOP', and 'DELETE'.

Here we can see that the following deployment instance was deployed successfully. Also before running the following you should set the IAM policy in your configuration, for example I granted the following account the roles/owner and roles/editor role as follows:

```
gcloud projects add-iam-policy-binding cdsds561-project-1 \
--member=serviceAccount:494559990174@cloudservices.gserviceaccount.com \
```

```
--role=roles/owner  
→ grants the role of roles/owner to the specified service account
```

```
gcloud projects add-iam-policy-binding cdsds561-project-1 \  
--member=serviceAccount:49455990174@cloudservices.gserviceaccount.com \  
--role=roles/editor  
→ grants the role of roles/editor to the specified service account  
gcloud projects add-iam-policy-binding cdsds561-project-1 \  
--member=serviceAccount:49455990174@cloudservices.gserviceaccount.com \  
--role=roles/iam.serviceAccountUser  
→ grants the role of roles/iam.serviceAccountUser to the specified service account
```

Details of the following deployed instance is as follows :

Google Cloud CDSDS561 Project 1

my-database DELETE

my-database has been deployed

- Overview - my-database
- database sqldadmin.py
  - my-database-instance cloud sql instance
  - my-database-db cloud sql database
  - my-database-replica-0 cloud sql instance
- service-accounts serviceaccounts.py
  - k8s-service-account service account
  - bind-iam-policy
  - gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
  - storage-admin-binding
  - gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
  - object-admin-binding
  - gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
  - cloud-sql-admin-binding
  - gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
  - logging-admin-binding
  - gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding
- my-pubsub-topic pubsub\_topic.jinja
  - my-pubsub-topic pubsub topic
  - pubsub-subscription pubsub subscription
  - hw8nirbhgsutil storage bucket
  - my-vm vm instance
  - my-vm-2 vm instance

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

Overview - my-database

**Deployment properties**

ID	2711126825179785458
Created On	2023-12-07 (13:59:41)
Manifest Name	manifest-1701975581711
Config	<a href="#">View</a>
Imports	<a href="#">pubsub_topic.jinja</a> <a href="#">serviceaccounts.py</a> <a href="#">sqldadmin.py</a>
Layout	<a href="#">View</a>
Expanded Config	<a href="#">View</a>

Deployment with firewall rule:

We can also use the describe command to see all the details regarding the following resource:

```
C:\Users\nirbh\AppData\Local\Google\Cloud SDK>gcloud deployment-manager deployments describe my-database
---
fingerprint: 5zNpSEyTBQfWor0nBdZnDQ==
id: '3142557320855146440'
insertTime: '2023-12-07T17:28:03.181-08:00'
manifest: manifest-1701998883193
name: my-database
operation:
  endTime: '2023-12-07T17:35:52.817-08:00'
  name: operation-1701998883136-60bf57ed663fc-44913426-bd6a991b
  operationType: insert
  progress: 100
  startTime: '2023-12-07T17:28:03.258-08:00'
  status: DONE
  user: nmalhotra@bu.edu
NAME          TYPE           STATE      INTENT
bind-iam-policy gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding COMPLETED
cloud-sql-admin-binding gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding COMPLETED
hw8nirbhgsutil storage.v1.bucket COMPLETED
k8s-service-account iam.v1.serviceAccount COMPLETED
logging-admin-binding gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding COMPLETED
my-database-db    gcp-types/sqladmin-v1beta4:databases COMPLETED
my-database-instance gcp-types/sqladmin-v1beta4:instances COMPLETED
my-database-replica-0 gcp-types/sqladmin-v1beta4:instances COMPLETED
my-pubsub-topic   pubsub.v1.topic COMPLETED
my-vm            compute.v1.instance COMPLETED
my-vm-2          compute.v1.instance COMPLETED
object-admin-binding gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding COMPLETED
pubsub-subscription pubsub.v1.subscription COMPLETED
storage-admin-binding gcp-types/cloudresourcemanager-v1:virtual.projects.iamMemberBinding COMPLETED
```

Deployment with firewall rule:

```
C:\Users\nirbh\AppData\Local\Google\Cloud SDK>gcloud deployment-manager deployments describe my-database
---
fingerprint: so-Sakpkb5UTjDURb8Wv2w==
id: '4385222819946873533'
insertTime: '2023-12-08T12:28:02.385-08:00'
manifest: manifest-1702067282397
name: my-database
operation:
  endTime: '2023-12-08T12:36:05.004-08:00'
  name: operation-1702067282346-60c056bbf81f6-be3fda79-105b5e5d
  operationType: insert
  progress: 100
  startTime: '2023-12-08T12:28:02.452-08:00'
  status: DONE
  user: nmalhotr@bu.edu
NAME          TYPE           STATE    INTENT
allow-http-fw compute.v1.firewall COMPLETED
bind-iam-policy gcp-types/cloudresourcemanager-v1:virtual.p COMPLETED
cloud-sql-admin-binding gcp-types/cloudresourcemanager-v1:virtual.p COMPLETED
hw8nirbhgsutil storage.v1.bucket COMPLETED
k8s-service-account iam.v1.serviceAccount COMPLETED
logging-admin-binding gcp-types/cloudresourcemanager-v1:virtual.p COMPLETED
my-database-db     gcp-types/sqladmin-v1beta4:databases   COMPLETED
my-database-instance gcp-types/sqladmin-v1beta4:instances  COMPLETED
my-database-replica-0 gcp-types/sqladmin-v1beta4:instances  COMPLETED
my-pubsub-topic   pubsub.v1.topic      COMPLETED
my-vm            compute.v1.instance COMPLETED
my-vm-2          compute.v1.instance COMPLETED
object-admin-binding gcp-types/cloudresourcemanager-v1:virtual.p COMPLETED
pubsub-subscription pubsub.v1.subscription COMPLETED
storage-admin-binding gcp-types/cloudresourcemanager-v1:virtual.p COMPLETED

```

Other than this, we can observe all the resources that were created due to the following deployment displayed below:

#### Database Instance :

The screenshot shows the Google Cloud Platform SQL Instances page. At the top, there are tabs for 'SQL' (selected), 'Instances' (highlighted in blue), 'CREATE INSTANCE', and 'MIGRATE DATA'. A 'SHOW INFO PANEL' button is also present. Below the tabs, there is a 'Filter' input field with the placeholder 'Enter property name or value'. The main table lists three database instances:

Instance ID	Cloud SQL edition	Type	Public IP address	Private IP address	Instance connection name	High availability	Location	Storage used	Label	Actions
<input type="checkbox"/> my-database	Enterprise	MySQL 8.0	104.196.58.0		cdsds561-project-1...	▼	ENABLE	us-east1-b	<div style="width: 10%;">0 B of 100 GB</div>	⋮
<input type="checkbox"/> my-database-instance	Enterprise	MySQL 8.0	34.73.164.51		cdsds561-project-1...	▼	ENABLE	us-east1-c	<div style="width: 10%;">1 GB of 10 GB</div>	⋮
<input type="checkbox"/> my-database-replica-0	Enterprise	MySQL read replica	34.138.134.19		cdsds561-project-1...	▼	ENABLE	us-east1-d	<div style="width: 10%;">1 GB of 10 GB</div>	⋮

Following sql database instance was created and within the following instance database "Fourth-Trial" was created.

#### Database :

The screenshot shows the MySQL Workbench interface. On the left, there's a sidebar with various icons. The main area is titled "Databases". Under "PRIM...", it says "All instances > my-database-instance". Below that, "my-database-instance" is selected, indicated by a green checkmark. It's described as "MySQL 8.0". There's a blue button labeled "+ CREATE DATABASE". A table lists database details:

Name ↑	Collation	Character set	Type
Fourth-Trial	utf8mb3_general_ci	utf8mb3	User
information_schema	utf8mb3_general_ci	utf8mb3	System
mysql	utf8mb3_general_ci	utf8mb3	System
performance_schema	utf8mb4_0900_ai_ci	utf8mb4	System
sys	utf8mb4_0900_ai_ci	utf8mb4	System

Now once this database Fourth-Trial was created, while the following bucket files are being created and the following instance is deployed, please change the password of the user : root as admin so that the following works smoothly. Other than this it will take time for the bucket's file creation.

Bucket :

The screenshot shows the Google Cloud Storage Buckets page. At the top, there's a search bar and a toolbar with various icons. The main area has tabs for "Buckets", "CREATE", and "REFRESH". Three informational cards are displayed:

- Review your Autoclass buckets**: New changes are coming to Autoclass. Review your Autoclass buckets to ensure you're prepared. Includes a "LEARN MORE" link.
- Transfer**: Power near real-time analytics and replication with event-driven transfers. Includes a "CREATE TRANSFER JOB" button and a "LEARN MORE" link.
- Security**: View security recommendations. Improve security by applying security recommendations to your buckets. Includes a "VIEW IN TABLE" and a "LEARN MORE" link.

Below these cards is a table showing a list of buckets:

Name ↑	Created	Location type	Location	Default storage class	Last modified	Public access	Access control	Protection	Lifecycle rule
cdsds561-project-1_cloudbuild	Nov 24, 2023, 10:04:47 AM	Multi-region	us	Standard	Nov 24, 2023, 10:04:47 AM	Subject to object ACLs	Fine-grained	None	None
gcf-check-files	Oct 4, 2023, 5:55:12 PM	Region	us-east1	Standard	Oct 4, 2023, 5:57:26 PM	⚠️ Public to internet	Uniform	None	None
hw2nirbhgsutil	Sep 25, 2023, 12:17:57 PM	Region	us-east1	Standard	Sep 27, 2023, 6:00:21 PM	⚠️ Public to internet	Uniform	None	None
hw4nirbhgsutil	Oct 16, 2023, 7:57:38 PM	Region	us-east1	Standard	Oct 16, 2023, 8:01:28 PM	⚠️ Public to internet	Uniform	None	None
hw5nirbhgsutil	Dec 7, 2023, 1:59:46 PM	Region	us-east1	Standard	Dec 7, 2023, 1:59:47 PM	⚠️ Public to internet	Fine-grained	None	None

## Bucket Files:

[Bucket details](#) [REFRESH](#) [LEARN](#)

**hw8nirbhgsutil**

**Public to internet:** This bucket is publicly accessible because allUsers or allAuthenticatedUsers have one or more permissions. Remove these principals to stop public access.

[EDIT ACCESS](#) [DISMISS](#)

Location	Storage class	Public access	Protection
us-east1 (South Carolina)	Standard	▲ Public to internet	None

**OBJECTS** **CONFIGURATION** **PERMISSIONS** **PROTECTION** **LIFECYCLE** **OBSERVABILITY** **INVENTORY REPORTS**

Buckets > hw8nirbhgsutil > test-dir

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

Filter by name prefix only  [Filter](#) Filter objects and folders [Show deleted data](#)

Name	Size	Type	Created	Storage class	Last modified	Public access	Version history	Encryption	Retention expiration da
0.html	104.4 KB	text/html	Dec 7, 2023, 2:02:46 PM	Standard	Dec 7, 2023, 2:02:46 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1.html	92.3 KB	text/html	Dec 7, 2023, 2:02:46 PM	Standard	Dec 7, 2023, 2:02:46 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
10.html	49.8 KB	text/html	Dec 7, 2023, 2:02:47 PM	Standard	Dec 7, 2023, 2:02:47 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
100.html	67.2 KB	text/html	Dec 7, 2023, 2:02:47 PM	Standard	Dec 7, 2023, 2:02:47 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1000.html	46.0 KB	text/html	Dec 7, 2023, 2:02:47 PM	Standard	Dec 7, 2023, 2:02:47 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1001.html	95.7 KB	text/html	Dec 7, 2023, 2:02:48 PM	Standard	Dec 7, 2023, 2:02:48 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1002.html	115.1 KB	text/html	Dec 7, 2023, 2:02:47 PM	Standard	Dec 7, 2023, 2:02:47 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1003.html	91.4 KB	text/html	Dec 7, 2023, 2:02:48 PM	Standard	Dec 7, 2023, 2:02:48 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1004.html	118.5 KB	text/html	Dec 7, 2023, 2:02:49 PM	Standard	Dec 7, 2023, 2:02:49 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1005.html	96.7 KB	text/html	Dec 7, 2023, 2:02:49 PM	Standard	Dec 7, 2023, 2:02:49 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1006.html	65.3 KB	text/html	Dec 7, 2023, 2:02:49 PM	Standard	Dec 7, 2023, 2:02:49 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1007.html	37.7 KB	text/html	Dec 7, 2023, 2:02:49 PM	Standard	Dec 7, 2023, 2:02:49 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1008.html	32.9 KB	text/html	Dec 7, 2023, 2:02:49 PM	Standard	Dec 7, 2023, 2:02:49 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
1009.html	81.7 KB	text/html	Dec 7, 2023, 2:02:50 PM	Standard	Dec 7, 2023, 2:02:50 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
101.html	75.4 KB	text/html	Dec 7, 2023, 2:02:50 PM	Standard	Dec 7, 2023, 2:02:50 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed

Last Files in Bucket are as follows :

[Bucket details](#) [REFRESH](#) [LEARN](#)

Name	Size	Type	Created	Storage class	Last modified	Public access	Version history	Encryption	Retention expiration da
9974.html	105.9 KB	text/html	Dec 7, 2023, 2:42:49 PM	Standard	Dec 7, 2023, 2:42:49 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9975.html	98.1 KB	text/html	Dec 7, 2023, 2:42:49 PM	Standard	Dec 7, 2023, 2:42:49 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9976.html	103 KB	text/html	Dec 7, 2023, 2:42:50 PM	Standard	Dec 7, 2023, 2:42:50 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9977.html	35.8 KB	text/html	Dec 7, 2023, 2:42:50 PM	Standard	Dec 7, 2023, 2:42:50 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9978.html	96.2 KB	text/html	Dec 7, 2023, 2:42:50 PM	Standard	Dec 7, 2023, 2:42:50 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9979.html	107.8 KB	text/html	Dec 7, 2023, 2:42:50 PM	Standard	Dec 7, 2023, 2:42:50 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
998.html	87.5 KB	text/html	Dec 7, 2023, 2:42:51 PM	Standard	Dec 7, 2023, 2:42:51 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9980.html	103.5 KB	text/html	Dec 7, 2023, 2:42:52 PM	Standard	Dec 7, 2023, 2:42:52 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9981.html	25.7 KB	text/html	Dec 7, 2023, 2:42:50 PM	Standard	Dec 7, 2023, 2:42:50 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9982.html	113.1 KB	text/html	Dec 7, 2023, 2:42:51 PM	Standard	Dec 7, 2023, 2:42:51 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9983.html	62.4 KB	text/html	Dec 7, 2023, 2:42:51 PM	Standard	Dec 7, 2023, 2:42:51 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9984.html	69.6 KB	text/html	Dec 7, 2023, 2:42:52 PM	Standard	Dec 7, 2023, 2:42:52 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9985.html	4.9 KB	text/html	Dec 7, 2023, 2:42:51 PM	Standard	Dec 7, 2023, 2:42:51 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9986.html	39.7 KB	text/html	Dec 7, 2023, 2:42:53 PM	Standard	Dec 7, 2023, 2:42:53 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9987.html	117 KB	text/html	Dec 7, 2023, 2:42:53 PM	Standard	Dec 7, 2023, 2:42:53 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9988.html	33.4 KB	text/html	Dec 7, 2023, 2:42:52 PM	Standard	Dec 7, 2023, 2:42:52 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9989.html	17.4 KB	text/html	Dec 7, 2023, 2:42:53 PM	Standard	Dec 7, 2023, 2:42:53 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
999.html	13.1 KB	text/html	Dec 7, 2023, 2:42:53 PM	Standard	Dec 7, 2023, 2:42:53 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9990.html	23.2 KB	text/html	Dec 7, 2023, 2:42:53 PM	Standard	Dec 7, 2023, 2:42:53 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9991.html	53.7 KB	text/html	Dec 7, 2023, 2:42:53 PM	Standard	Dec 7, 2023, 2:42:53 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9992.html	62.9 KB	text/html	Dec 7, 2023, 2:42:54 PM	Standard	Dec 7, 2023, 2:42:54 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9993.html	34.4 KB	text/html	Dec 7, 2023, 2:42:54 PM	Standard	Dec 7, 2023, 2:42:54 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9994.html	71.6 KB	text/html	Dec 7, 2023, 2:42:54 PM	Standard	Dec 7, 2023, 2:42:54 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9995.html	116.5 KB	text/html	Dec 7, 2023, 2:42:54 PM	Standard	Dec 7, 2023, 2:42:54 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9996.html	104.4 KB	text/html	Dec 7, 2023, 2:42:54 PM	Standard	Dec 7, 2023, 2:42:54 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9997.html	8.7 KB	text/html	Dec 7, 2023, 2:42:55 PM	Standard	Dec 7, 2023, 2:42:55 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9998.html	116 KB	text/html	Dec 7, 2023, 2:42:55 PM	Standard	Dec 7, 2023, 2:42:55 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed
9999.html	31.9 KB	text/html	Dec 7, 2023, 2:42:55 PM	Standard	Dec 7, 2023, 2:42:55 PM	▲ Public to internet	<a href="#">Copy URL</a>	—	Google-managed

Rows per page: 100  9901 – 10000 of 10000 [<](#) [>](#)

Service Account created with the deployment is as follows:

Service accounts								<a href="#">+ CREATE SERVICE ACCOUNT</a>	DELETE	MANAGE ACCESS	REFRESH	LEARN
Service accounts for project "CDSDS561 Project 1"												
A service account represents a Google Cloud service identity, such as code running on Compute Engine VMs, App Engine apps, or systems running outside Google. <a href="#">Learn more about service accounts</a>												
Organization policies can be used to secure service accounts and block risky service account features, such as automatic IAM Grants, key creation/upload, or the creation of service accounts entirely. <a href="#">Learn more about service account organization policies</a>												
<b>Filter</b> Enter property name or value												
Email	Status	Name	Description	Key ID	Key creation date	OAuth 2 Client ID	Actions					
<a href="#">cdsds561-project-1@appspot.gserviceaccount.com</a>	Enabled	App Engine default service account	No keys		108276230261645356630							
<a href="#">cloud-sql-authorization@cdsds561-project-1.iam.gserviceaccount.com</a>	Enabled	cloud-sql-authorization	No keys		113186191917360545853							
<a href="#">cloud-sql-authorize-vm@cdsds561-project-1.iam.gserviceaccount.com</a>	Enabled	cloud-sql-authorize-vm	No keys		115073951522205129327							
<a href="#">cloud-sql-deployment-manager-v@cdsds561-project-1.iam.gserviceaccount.com</a>	Enabled	cloud-sql-deployment-manager-vm	No keys		102137613810641400302							
<a href="#">494559990174-compute@developer.gserviceaccount.com</a>	Enabled	Compute Engine default service account	No keys		112375332360497723515							
<a href="#">dataflow-admin-service-vm-hw7@cdsds561-project-1.iam.gserviceaccount.com</a>	Enabled	dataflow-admin-service-vm-hw7	No keys		115947440692188786714							
<a href="#">k8s-service-account@cdsds561-project-1.iam.gserviceaccount.com</a>	Enabled	k8s-service-account	No keys		113658905677092002022							
<a href="#">nirbhhwbucketpermission@cdsds561-project-1.iam.gserviceaccount.com</a>	Enabled	nirbhhwbucketpermission	3185d9128a0f660311fb49e754af8f5dd4bee8ad	Sep 22, 2023	104963024741525367254							
<a href="#">pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com</a>	Enabled	pubsub_plus_logging_docker	e85c399a0b55b9da84ad11f4d41fdb47895ddf27	Nov 24, 2023	103672942859366617110							
<a href="#">pubsubserviceacc-hw3-nirbh@cdsds561-project-1.iam.gserviceaccount.com</a>	Enabled	pubsubServiceAcc-hw3-nirbh	577dc490edcd8748daff0d346c1bd51707470fe	Oct 10, 2023	115335040096248683739							

The following service account helps us in adding files to the bucket, logging the results of the request made, and sending the 403 messages to the topic.

Pub sub Topic :

Topics		<a href="#">CREATE TOPIC</a>	DELETE	SHOW INFO PANEL
Simplify data lake pipelines with new Pub/Sub Cloud Storage subscriptions	X			
You can now streamline your data ingestion pipelines with Cloud Storage subscriptions, enabling you to write raw streaming data into Cloud Storage without any transformations in between. To get started, create a new Cloud Storage subscription for a Pub/Sub topic.		<a href="#">CREATE CLOUD STORAGE SUBSCRIPTION</a>	<a href="#">LEARN MORE</a>	
Stream data directly into BigQuery with Pub/Sub	X			
Leverage Pub/Sub BigQuery subscription to ingest raw data into BigQuery to accelerate your time to insights. Get started by creating a new BigQuery subscription that is associated with a Pub/Sub topic.		<a href="#">TRY NOW</a>	<a href="#">LEARN MORE</a>	
LIST	METRICS			
Filter	Filter topics			
Topic ID	Encryption key	Topic name		Retention
<a href="#">hw3nirbhgsutil</a>	Google-managed	projects/cdssds561-project-1/topics/hw3nirbhgsutil		—
<a href="#">my-pubsub-topic</a>	Google-managed	projects/cdssds561-project-1/topics/my-pubsub-topic		—

Pub sub Subscription:

The screenshot shows the Google Cloud Platform Pub/Sub interface for the topic 'my-pubsub-topic'. At the top, there are buttons for EDIT, TRIGGER CLOUD FUNCTION, IMPORT, and DELETE. A message box indicates that export options have moved to the Create subscription dropdown menu under the Subscriptions tab below. The Topic name is set to 'projects/cdsds561-project-1/topics/my-pubsub-topic'. Below the topic name, two modal windows are open: 'Export to BigQuery' (Export data to a BigQuery table) and 'Export to Cloud Storage' (Export data to a text or Avro file in Cloud Storage). Both modals have an 'EXPORT DATA' button. Below the modals, there are tabs for SUBSCRIPTIONS, SNAPSHOT, METRICS, DETAILS, and MESSAGES. The SUBSCRIPTIONS tab is selected, showing a single subscription named 'my-pubsub-sub' with the details: Subscription ID: my-pubsub-sub, Subscription name: projects/cdsds561-project-1/subscriptions/my-pubsub-sub, Project: cdsds561-project-1. There is also a 'CREATE SUBSCRIPTION' button and an 'EXPORT' button.

### Subscription details :

The screenshot shows the Google Cloud Platform Pub/Sub interface for the subscription 'my-pubsub-sub'. At the top, there are buttons for EDIT, CREATE SNAPSHOT, REPLAY MESSAGES, PURGE MESSAGES, DETACH, and DELETE. A message box indicates that export options have moved to the Create subscription dropdown menu under the Subscriptions tab below. The Subscription name is set to 'projects/cdsds561-project-1/subscriptions/my-pubsub-sub'. Below the subscription name, there are tabs for METRICS, DETAILS, and MESSAGES. The DETAILS tab is selected, showing the subscription state as active and the topic name as 'projects/cdsds561-project-1/topics/my-pubsub-topic'.

Following service account created above has the pubsub.admin and the pubsub.subscriber role which helps both the vm in publishing and subscribing to the topic.

### VM - 1 instance:

The screenshot shows the Google Cloud Platform VM instances page. At the top, there are buttons for CREATE INSTANCE, IMPORT VM, and REFRESH. A message box indicates that export options have moved to the Create subscription dropdown menu under the Subscriptions tab below. The Instances tab is selected, showing four VM instances: 'instance-5' (Status: active, Zone: us-east1-b), 'instance-6' (Status: active, Zone: us-east1-b), 'my-vm' (Status: active, Zone: us-east1-b), and 'my-vm-2' (Status: active, Zone: us-east1-b). Each instance row includes columns for Status, Name, Zone, Recommendations, In use by, Internal IP, External IP, and Connect (SSH dropdown). Below the table, there is a 'Related actions' section.

Vm instance : my-vm is where the web server runs and the following vm has the startup script that will run the following web server.

### VM - 2 instance :

VM instances		CREATE INSTANCE	IMPORT VM	REFRESH					
INSTANCES		OBSERVABILITY	INSTANCE SCHEDULES						
VM instances									
Filter Enter property name or value									
Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect		
<input type="checkbox"/>	instance-5	us-east1-b			10.142.0.59 (nic0)	34.23.176.159  (nic0)	SSH		
<input type="checkbox"/>	instance-6	us-east1-b			10.142.15.229 (nic0)		SSH		
<input type="checkbox"/>	my-vm	us-east1-b			10.142.0.31 (nic0)	34.138.50.144 (nic0)	SSH		
<input type="checkbox"/>	my-vm-2	us-east1-b			10.142.0.30 (nic0)	34.75.240.1 (nic0)	SSH		

#### Related actions

Vm instance : my-vm-2 has the startup script and the service account that allows the following vm to act as a pubsub listener vm which we can see below. You can add the code for app-2.py from the github to check for the listening of the following forbidden requests.

Now once the webserver has started and if you aren't able to see the response of any request but you can see the following on the localhost, you can use the following command:

```
gcloud compute firewall-rules create allow-http --allow=tcp:80
--description="Allow HTTP traffic"
```

I have also added the following firewall rule in my yaml file. If that doesn't work the above command can help regarding it.

SQL TABLES Once the web server launches on the vm-1:

```
nmalhotra@cloudshell:~ (cdsds561-project-1)$ gcloud sql connect my-database-instance --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 769
Server version: 8.0.31-google (Google)

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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> USE Fourth-Trial;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_Fourth-Trial |
+-----+
| Clients                |
| error_log               |
| main_table              |
+-----+
3 rows in set (0.00 sec)

mysql> 
```

Once the web server starts, we can observe the sql Fourth-Trial database and its tables that are Clients, main\_table and error\_log.

Initially, all the tables are empty which we can see as follows :

```
mysql> select * from Clients;
Empty set (0.00 sec)

mysql> select * from error_log;
Empty set (0.00 sec)

mysql> select * from main_table;
Empty set (0.01 sec)

mysql> █
```

Curl Commands :

GET REQUEST:

Once we use the curl command on instance 5 we get the following result:

```
last loggin: Thu Dec 7 10:13:57 2023 from 34.23.160.50
nmalhotra@instance-5:~$ curl -X GET http://34.138.50.144/hw8nirbhgsutil/test-dir/10.html
<!DOCTYPE html>
<html>
<body>


Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.


<p>
<a href="5678.html"> This is a link </a>
<p>


Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.


<p>
<a href="8126.html"> This is a link </a>
<p>


Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.


<p>
```

Log results :

```
> i 2023-12-08 13:57:02.328 2023-12-08T18:57:02.327799Z 2352 [Note] [MY-010914] [Server] Aborted connection 2352 to db: 'Fourth-Trial' user: 'root' host: '34.23.160.50' (Got an error reading c...
> * 2023-12-08 13:57:54.881 my-vm Country of origin: Unknown
> * 2023-12-08 13:57:55.009 my-vm File Found.
> i 2023-12-08 13:57:55.135 my-vm startup-script: 34.23.160.50 - - [08/Dec/2023 18:57:55] "GET /hw8nirbhgsutil/test-dir/10.html HTTP/1.1" 200 -
```

200 case :

Tables of the Database “Fourth-Trial” are as follows:

Clients :

```
mysql> select * from Clients;
+-----+-----+-----+-----+
| client_id | gender | age | income |
+-----+-----+-----+-----+
| 1 | Unknown | Unknown | Unknown |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

Main\_table :

```
mysql> select * from main_table;
+-----+-----+-----+-----+-----+-----+-----+
| id | client_id | country | client_ip | is_banned | time_of_day | requested_file |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Unknown | Unknown | 0 | 2023-12-07 19:51:32 | 10.html |
+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

Error\_log :

```
mysql> select * from error_log;
Empty set (0.00 sec)
```

Error : File Not Found Case:

404 case :

We run the curl command to extract the file that doesn't exist in the database created as follows:

```
nmalhotr@instance-5:~$ curl -X GET http://34.138.50.144/hw8nirbhgsutil/test-dir/100000002.html
File Not Foundnmalhotr@instance-5:~$
```

We can see that we get the File Not Found message.

Log results:

```
> ⚡ 2023-12-08 14:02:28.489 [my-vm] Error while fetching file: 404 GET https://storage.googleapis.com/download/storage/v1/b/hw8nirbhgsutil/o/test-dir%2F100000002.html?alt=media: No such object
> ⚡ 2023-12-08 14:02:28.621 [my-vm] File Not Found. Error 404
> ⚡ 2023-12-08 14:02:28.693 [my-vm] startup-script: 34.23.168.50 - - [08/Dec/2023 19:02:28] " [33mGET /hw8nirbhgsutil/test-dir/100000002.html HTTP/1.1 [0m" 404 -
① To view newer entries: Extend time by 1 day | Edit time
```

Tables of Database “Fourth-Trial” are listed as follows:

Clients :

```

mysql> select * from Clients;
+-----+-----+-----+-----+
| client_id | gender | age | income |
+-----+-----+-----+-----+
| 1 | Unknown | Unknown | Unknown |
| 2 | Unknown | Unknown | Unknown |
+-----+-----+-----+-----+
2 rows in set (0.00 sec)

```

Main\_table :

```

mysql> select * from main_table;
+-----+-----+-----+-----+-----+-----+-----+
| id | client_id | country | client_ip | is_banned | time_of_day | requested_file |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Unknown | Unknown | 0 | 2023-12-07 19:51:32 | 10.html |
| 2 | 2 | Unknown | Unknown | 0 | 2023-12-07 19:53:22 | 100000002.html |
+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

```

Error\_log :

```

mysql> select * from error_log;
+-----+-----+-----+-----+
| id | time_of_request | requested_file | error_code |
+-----+-----+-----+-----+
| 1 | 2023-12-07 19:53:23 | 100000002.html | 404 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

```

ERROR: 501 Method Not Implemented: PUT REQUEST:

```

nmalhotr@instance-5:~$ curl -X GET http://34.138.50.144/hw8nirbhgsutil/test-dir/100000002.html
File Not Foundnmalhotr@instance-5:~$ curl -X PUT http://34.138.50.144/hw8nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$ []

```

When we try to make a request other than the get request, we get the Method Not Implemented message.

Log results :

```

> ⓘ 2023-12-08 14:03:38.876  my-vm startup-script: 34.23.160.50 - - [08/Dec/2023 19:03:38] "GET /hw8nirbhgsutil/test-dir/102.html HTTP/1.1" 200 -
> ⓘ 2023-12-08 14:03:44.392  my-vm Unsupported HTTP method: PUT
> ⓘ 2023-12-08 14:03:44.474  my-vm startup-script: 34.23.160.50 - - [08/Dec/2023 19:03:44] " [35m [1mPUT /hw8nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
> ⓘ 2023-12-08 14:05:51.562  2023-12-08T19:05:51.557762Z 2881 [Note] [MY-010914] [Server] Aborted connection 2881 to db: 'unconnected' user: 'root' host: '127.0.0.1' (Got an error reading commu-

```

501 case :

Tables of the Database “Fourth-Trial” are as follows:

Clients :

```
mysql> select * from Clients;
+-----+-----+-----+-----+
| client_id | gender | age | income |
+-----+-----+-----+-----+
| 1 | Unknown | Unknown | Unknown |
| 2 | Unknown | Unknown | Unknown |
| 3 | Unknown | Unknown | Unknown |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

Main\_table :

```
mysql> select * from main_table;
+-----+-----+-----+-----+-----+-----+-----+
| id | client_id | country | client_ip | is_banned | time_of_day | requested_file |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Unknown | Unknown | 0 | 2023-12-07 19:51:32 | 10.html |
| 2 | 2 | Unknown | Unknown | 0 | 2023-12-07 19:53:22 | 100000002.html |
| 3 | 3 | Unknown | Unknown | 0 | 2023-12-07 19:54:49 | 102.html |
+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

Error\_log :

```
mysql> select * from error_log;
+-----+-----+-----+-----+
| id | time_of_request | requested_file | error_code |
+-----+-----+-----+-----+
| 1 | 2023-12-07 19:53:23 | 100000002.html | 404 |
| 2 | 2023-12-07 19:54:49 | 102.html | 501 |
+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

HTTP - Clients requests :

Other than curl commands we can use the http-client from the instance-5 or we can use its directory deployment manager to make requests using the http-client as follows:

```
nmalhotr@instance-5:~$ curl -X GET http://34.138.50.144/hw8nirbhgsutil/test-dir/100000002.html
File Not Foundnmalhotr@instance-5:~$ curl -X PUT http://34.138.50.144/hw8nirbhgsutil/test-dir/102.html
nmalhotr@instance-5:~$ python3 http-client.py -d 34.138.50.144 -b /hw8nirbhgsutil -w test-dir -n 20 -i 10000 -v
```

```

em ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo con sequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="#5619.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="#1617.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="#6576.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="#8439.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="#3060.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="#5290.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="#1344.html"> This is a link </a>\n<p>\n</body>\n</html>\n'
```

normalhotr@instance-5:~/deployment-manager\$

## Log Results:

```

> * 2023-12-08 14:26:03.087 [my-vm] Country of origin: Iran
> i 2023-12-08 14:26:03.267 [my-vm] startup-script: 34.23.160.50 - - [08/Dec/2023 19:26:03] " [31m [1mGET /hw8nirbhgsutil/test-dir/1383.html HTTP/1.1 [0m" 403 -
> * 2023-12-08 14:26:03.308 [my-vm] Country of origin: Bolivia
> * 2023-12-08 14:26:03.427 [my-vm] File Found.
> i 2023-12-08 14:26:03.571 [my-vm] startup-script: 34.23.160.50 - - [08/Dec/2023 19:26:03] "GET /hw8nirbhgsutil/test-dir/5230.html HTTP/1.1" 200 -
> * 2023-12-08 14:26:03.614 [my-vm] Country of origin: Venezuela
> * 2023-12-08 14:26:03.761 [my-vm] File Found.
> i 2023-12-08 14:26:03.879 [my-vm] startup-script: 34.23.160.50 - - [08/Dec/2023 19:26:03] "GET /hw8nirbhgsutil/test-dir/6627.html HTTP/1.1" 200 -
> * 2023-12-08 14:26:03.993 [my-vm] Country of origin: Niger
> * 2023-12-08 14:26:04.176 [my-vm] File Found.
> i 2023-12-08 14:26:04.257 [my-vm] startup-script: 34.23.160.50 - - [08/Dec/2023 19:26:04] "GET /hw8nirbhgsutil/test-dir/2944.html HTTP/1.1" 200 -
> * 2023-12-08 14:26:04.382 [my-vm] Country of origin: Bhutan
> * 2023-12-08 14:26:04.488 [my-vm] File Found.
> i 2023-12-08 14:26:04.592 [my-vm] startup-script: 34.23.160.50 - - [08/Dec/2023 19:26:04] "GET /hw8nirbhgsutil/test-dir/6577.html HTTP/1.1" 200 -
> * 2023-12-08 14:26:04.627 [my-vm] Country of origin: Pakistan
> * 2023-12-08 14:26:04.773 [my-vm] File Found.
> i 2023-12-08 14:26:04.882 [my-vm] startup-script: 34.23.160.50 - - [08/Dec/2023 19:26:04] "GET /hw8nirbhgsutil/test-dir/5411.html HTTP/1.1" 200 -
> * 2023-12-08 14:26:04.913 [my-vm] Country of origin: Uruguay
> * 2023-12-08 14:26:05.023 [my-vm] File Found.
> i 2023-12-08 14:26:05.142 [my-vm] startup-script: 34.23.160.50 - - [08/Dec/2023 19:26:05] "GET /hw8nirbhgsutil/test-dir/7288.html HTTP/1.1" 200 -

```

Once all the request responses are captured, we check the database tables to determine the entries in the `main_table` and `error_logs` as follows:

## Clients :

```
mysql> select * from Clients;
+-----+-----+-----+-----+
| client_id | gender | age      | income    |
+-----+-----+-----+-----+
|      1 | Unknown | Unknown | Unknown   |
|      2 | Unknown | Unknown | Unknown   |
|      3 | Unknown | Unknown | Unknown   |
|      4 | Male    | 76+     | 100k-150k |
|      5 | Female  | 0-16    | 150k-250k |
|      6 | Male    | 36-45   | 100k-150k |
|      7 | Female  | 46-55   | 20k-40k   |
|      8 | Female  | 66-75   | 60k-100k  |
|      9 | Female  | 66-75   | 40k-60k   |
|     10 | Male    | 76+     | 0-10k    |
|     11 | Female  | 56-65   | 60k-100k  |
|     12 | Female  | 26-35   | 60k-100k  |
|     13 | Female  | 46-55   | 40k-60k   |
|     14 | Female  | 46-55   | 40k-60k   |
|     15 | Male    | 26-35   | 250k+    |
|     16 | Female  | 46-55   | 150k-250k |
|     17 | Female  | 56-65   | 0-10k    |
|     18 | Female  | 36-45   | 0-10k    |
|     19 | Female  | 26-35   | 60k-100k  |
|     20 | Male    | 66-75   | 250k+    |
|     21 | Male    | 26-35   | 100k-150k |
|     22 | Female  | 36-45   | 10k-20k   |
|     23 | Male    | 17-25   | 40k-60k   |
+-----+-----+-----+-----+
23 rows in set (0.00 sec)
```

Main\_table :

```

mysql> select * from main_table;
+---+---+---+---+---+---+
| id | client_id | country | client_ip | is_banned | time_of_day | requested_file |
+---+---+---+---+---+---+
| 1 | 1 | Unknown | Unknown | 0 | 2023-12-07 19:51:32 | 10.html |
| 2 | 2 | Unknown | Unknown | 0 | 2023-12-07 19:53:22 | 100000002.html |
| 3 | 3 | Unknown | Unknown | 0 | 2023-12-07 19:54:49 | 102.html |
| 4 | 4 | Angola | 209.16.121.117 | 0 | 2023-12-07 04:00:00 | 3570.html |
| 5 | 5 | Turkey | 41.93.150.115 | 0 | 2023-12-07 04:00:00 | 8472.html |
| 6 | 6 | Bahamas | 143.200.139.198 | 0 | 2023-12-07 19:00:00 | 1547.html |
| 7 | 7 | Congo, Democratic Republic of the | 226.88.224.116 | 0 | 2023-12-07 01:00:00 | 92.html |
| 8 | 8 | Saint Vincent and the Grenadines | 166.149.193.228 | 0 | 2023-12-07 03:00:00 | 3682.html |
| 9 | 9 | Comoros | 134.224.104.81 | 0 | 2023-12-07 14:00:00 | 902.html |
| 10 | 10 | Cote d'Ivoire | 174.155.84.159 | 0 | 2023-12-07 02:00:00 | 3516.html |
| 11 | 11 | Cabo Verde | 58.85.235.200 | 0 | 2023-12-07 20:00:00 | 7853.html |
| 12 | 12 | United States of America (USA) | 197.35.55.181 | 0 | 2023-12-07 23:00:00 | 5538.html |
| 13 | 13 | Philippines | 73.145.26.130 | 0 | 2023-12-07 12:00:00 | 887.html |
| 14 | 14 | Jamaica | 234.119.154.182 | 0 | 2023-12-07 17:00:00 | 4706.html |
| 15 | 15 | Taiwan | 203.145.135.17 | 0 | 2023-12-07 00:00:00 | 9021.html |
| 16 | 16 | Bahrain | 98.139.210.172 | 0 | 2023-12-07 19:00:00 | 6133.html |
| 17 | 17 | Tunisia | 23.137.90.94 | 0 | 2023-12-07 18:00:00 | 8889.html |
| 18 | 18 | Ethiopia | 27.36.216.107 | 0 | 2023-12-07 09:00:00 | 3276.html |
| 19 | 19 | Tonga | 215.193.97.238 | 0 | 2023-12-07 13:00:00 | 7296.html |
| 20 | 20 | Libya | 51.179.72.41 | 1 | 2023-12-07 02:00:00 | 8522.html |
| 21 | 21 | Egypt | 12.25.35.80 | 0 | 2023-12-07 18:00:00 | 5546.html |
| 22 | 22 | Colombia | 50.145.163.42 | 0 | 2023-12-07 10:00:00 | 9393.html |
| 23 | 23 | Georgia | 226.62.189.63 | 0 | 2023-12-07 23:00:00 | 5407.html |
+---+---+---+---+---+---+
23 rows in set (0.00 sec)

```

### Error\_log :

```

mysql> select * from error_log;
+---+---+---+---+
| id | time_of_request | requested_file | error_code |
+---+---+---+---+
| 1 | 2023-12-07 19:53:23 | 100000002.html | 404 |
| 2 | 2023-12-07 19:54:49 | 102.html | 501 |
| 3 | 2023-12-07 19:59:44 | 8522.html | 403 |
+---+---+---+---+
3 rows in set (0.00 sec)

```

We can also start the second application on the my-vm-2 vm instance that can help us in listening to all the forbidden requests made by the following http-client.

### APP- 2-

```

nmalhotr@my-vm-2:~$ python3 app-2.py
Listening for messages on projects/cdsds561-project-1/subscriptions/my-pubsub-sub..
[  

python3: can't open file '/home/nmalhotr/app2.py': [Errno 2] No such file or directory
nmalhotr@my-vm-2:~$ python3 app-2.py
Listening for messages on projects/cdsds561-project-1/subscriptions/my-pubsub-sub..

Received message: b'{"data": "GET", "headers": {"Host": "34.138.50.144", "Accept-Encoding": "identity", "X-Country": "Libya", "X-Client-Ip": "51.179.72.41", "X-Gender": "Male", "X-Age": "66-75", "X-Income": "250k+", "X-Time": "2023-12-07 02:00:00"}'
Received forbidden request from country: Libya
Error: Access is prohibited. Error 403
Message acknowledged successfully.
[  


```

Down below is just another example of testing but this time, http-client was used before the Curl commands which is as follows:

We can make the 20 requests to the following web server using the http-clients as follows:

### Http - Clients :

```
mmalhotr@instance-5:~/deployment-manager$ nano http-client.py
mmalhotr@instance-5:~/deployment-manager$ python3 http-client.py -d 34.138.50.144 -b /hw8nirbhgsutil -w test-di
r -n 20 -i 10000 -v[]

em ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\ncinim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo con sequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="5619.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\ncinim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="1617.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\ncinim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="6576.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\ncinim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="8439.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\ncinim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="3060.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\ncinim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="5290.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\ncinim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="1607.html"> This is a link </a>\n<p>\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\ncinim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\n<p>\n<a href="1344.html"> This is a link </a>\n<p>\n</body>\n</html>\n'

mmalhotr@instance-5:~/deployment-manager$ []
```

### Clients :

```
mysql> select * from Clients;
+-----+-----+-----+-----+
| client_id | gender | age   | income |
+-----+-----+-----+-----+
|       61 | Male   | 26-35 | 0-10k  |
|       62 | Male   | 26-35 | 40k-60k |
|       63 | Male   | 17-25 | 0-10k  |
|       64 | Female | 46-55 | 100k-150k|
|       65 | Female | 36-45 | 20k-40k |
|       66 | Female | 36-45 | 10k-20k |
|       67 | Male   | 56-65 | 100k-150k|
|       68 | Female | 0-16  | 100k-150k|
|       69 | Male   | 17-25 | 0-10k  |
|       70 | Female | 0-16  | 40k-60k |
|       71 | Male   | 46-55 | 10k-20k |
|       72 | Male   | 36-45 | 40k-60k |
|       73 | Male   | 36-45 | 0-10k  |
|       74 | Male   | 0-16  | 10k-20k |
|       75 | Male   | 66-75 | 0-10k  |
|       76 | Male   | 76+   | 250k+  |
|       77 | Male   | 46-55 | 40k-60k |
|       78 | Male   | 0-16  | 40k-60k |
|       79 | Female | 36-45 | 250k+  |
|       80 | Female | 66-75 | 0-10k  |
+-----+-----+-----+-----+
20 rows in set (0.01 sec)
```

Main\_table :

```
mysql> select * from main_table;
+---+-----+-----+-----+-----+-----+
| id | client_id | country | client_ip | is_banned | time_of_day | requested_file |
+---+-----+-----+-----+-----+-----+
| 61 | 61 | Finland | 174.39.95.3 | 0 | 2023-12-08 18:00:00 | 2550.html |
| 62 | 62 | Namibia | 130.238.247.51 | 0 | 2023-12-08 06:00:00 | 9617.html |
| 63 | 63 | Somalia | 35.109.208.111 | 0 | 2023-12-08 21:00:00 | 8218.html |
| 64 | 64 | Sri Lanka | 46.32.148.190 | 0 | 2023-12-08 18:00:00 | 3582.html |
| 65 | 65 | Antigua and Barbuda | 236.14.23.200 | 0 | 2023-12-08 07:00:00 | 1138.html |
| 66 | 66 | Ghana | 34.161.237.143 | 0 | 2023-12-08 08:00:00 | 2936.html |
| 67 | 67 | North Korea | 53.252.166.41 | 1 | 2023-12-08 10:00:00 | 3890.html |
| 68 | 68 | North Korea | 9.16.7.10 | 1 | 2023-12-08 16:00:00 | 4694.html |
| 69 | 69 | North Korea | 9.16.7.108 | 1 | 2023-12-08 22:00:00 | 191.html |
| 70 | 70 | Jamaica | 112.243.160.190 | 0 | 2023-12-08 12:00:00 | 3199.html |
| 71 | 71 | Paraguay | 115.23.103.233 | 0 | 2023-12-08 15:00:00 | 4805.html |
| 72 | 72 | Kuwait | 8.195.69.97 | 0 | 2023-12-08 22:00:00 | 1439.html |
| 73 | 73 | Vatican City (Holy See) | 209.34.250.71 | 0 | 2023-12-08 01:00:00 | 4901.html |
| 74 | 74 | Malawi | 110.151.139.22 | 0 | 2023-12-08 02:00:00 | 4005.html |
| 75 | 75 | Sudan | 87.29.105.119 | 1 | 2023-12-08 22:00:00 | 7948.html |
| 76 | 76 | Tajikistan | 128.213.14.18 | 0 | 2023-12-08 12:00:00 | 8703.html |
| 77 | 77 | Solomon Islands | 155.32.170.24 | 0 | 2023-12-08 13:00:00 | 8926.html |
| 78 | 78 | Ethiopia | 116.94.25.168 | 0 | 2023-12-08 15:00:00 | 2828.html |
| 79 | 79 | Kuwait | 8.195.69.12 | 0 | 2023-12-08 14:00:00 | 2176.html |
| 80 | 80 | Bhutan | 139.199.112.140 | 0 | 2023-12-08 04:00:00 | 7967.html |
+---+-----+-----+-----+-----+-----+
20 rows in set (0.00 sec)
```

#### Error\_log:

```
mysql> select * From error_log;
+---+-----+-----+-----+
| id | time_of_request | requested_file | error_code |
+---+-----+-----+-----+
| 1 | 2023-12-08 02:22:00 | 3890.html | 403 |
| 2 | 2023-12-08 02:22:00 | 4694.html | 403 |
| 3 | 2023-12-08 02:22:01 | 191.html | 403 |
| 4 | 2023-12-08 02:22:02 | 7948.html | 403 |
+---+-----+-----+-----+
4 rows in set (0.00 sec)
```

We can also start the second application for monitoring the forbidden requests that we get from the newly created topic.

#### App-2.py:

```
^CSubscriber stopped by user.
nmalhotra@my-vm-2:~$ python3 app-2.py
Listening for messages on projects/cdsds561-project-1/subscriptions/my-pubsub-sub..
```



```

nmalhotr@my-vm-2:~$ python3 app-2.py
Listening for messages on projects/cdsds561-project-1/subscriptions/my-pubsub-sub..

Received message: b'{"data": "GET", "headers": {"Host": "34.139.27.145", "Accept-Encoding": "identity", "X-Country": "North Korea", "X-Client-Ip": "53.252.166.41", "X-Gender": "Male", "X-Age": "56-65", "X-Income": "100k-150k", "X-Time": "2023-12-08 10:00:00"}}'
Received forbidden request from country: North Korea
Error: Access is prohibited. Error 403
Message acknowledged successfully.
Received message: b'{"data": "GET", "headers": {"Host": "34.139.27.145", "Accept-Encoding": "identity", "X-Country": "North Korea", "X-Client-Ip": "9.16.7.10", "X-Gender": "Female", "X-Age": "0-16", "X-Income": "100k-150k", "X-Time": "2023-12-08 16:00:00"}}'
Received forbidden request from country: North Korea
Error: Access is prohibited. Error 403
Message acknowledged successfully.
Received message: b'{"data": "GET", "headers": {"Host": "34.139.27.145", "Accept-Encoding": "identity", "X-Country": "North Korea", "X-Client-Ip": "9.16.7.108", "X-Gender": "Male", "X-Age": "17-25", "X-Income": "0-10k", "X-Time": "2023-12-08 22:00:00"}}'
Received forbidden request from country: North Korea
Error: Access is prohibited. Error 403
Message acknowledged successfully.
Received message: b'{"data": "GET", "headers": {"Host": "34.139.27.145", "Accept-Encoding": "identity", "X-Country": "Sudan", "X-Client-Ip": "87.29.105.119", "X-Gender": "Male", "X-Age": "66-75", "X-Income": "0-10k", "X-Time": "2023-12-08 22:00:00"}}'
Received forbidden request from country: Sudan
Error: Access is prohibited. Error 403
Message acknowledged successfully.

```

After all the client requests we can make the curl requests as follows :

### GET REQUEST:

```

nmalhotr@instance-5:~$ curl -X GET http://34.138.50.144/hw8nirbhgsutil/test-dir/10.html
<!DOCTYPE html>
<html>
<body>


Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.


<p>
<a href="5678.html"> This is a link </a>
<p>


Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.


<p>
<a href="8126.html"> This is a link </a>
<p>


Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.


<p>
<a href="838.html"> This is a link </a>
<p>

```

### Clients :

```

mysql> select * from Clients;
+-----+-----+-----+-----+
| client_id | gender | age      | income    |
+-----+-----+-----+-----+
|       61  | Male   | 26-35   | 0-10k    |
|       62  | Male   | 26-35   | 40k-60k  |
|       63  | Male   | 17-25   | 0-10k    |
|       64  | Female | 46-55   | 100k-150k|
|       65  | Female | 36-45   | 20k-40k  |
|       66  | Female | 36-45   | 10k-20k  |
|       67  | Male   | 56-65   | 100k-150k|
|       68  | Female | 0-16    | 100k-150k|
|       69  | Male   | 17-25   | 0-10k    |
|       70  | Female | 0-16    | 40k-60k  |
|       71  | Male   | 46-55   | 10k-20k  |
|       72  | Male   | 36-45   | 40k-60k  |
|       73  | Male   | 36-45   | 0-10k    |
|       74  | Male   | 0-16    | 10k-20k  |
|       75  | Male   | 66-75   | 0-10k    |
|       76  | Male   | 76+     | 250k+    |
|       77  | Male   | 46-55   | 40k-60k  |
|       78  | Male   | 0-16    | 40k-60k  |
|       79  | Female | 36-45   | 250k+    |
|       80  | Female | 66-75   | 0-10k    |
|       81  | Unknown | Unknown | Unknown  |
+-----+-----+-----+-----+
21 rows in set (0.00 sec)

```

Error log:

```

mysql> select * From error_log;
+-----+-----+-----+-----+
| id | time_of_request | requested_file | error_code |
+-----+-----+-----+-----+
|  1 | 2023-12-08 02:22:00 | 3890.html | 403 |
|  2 | 2023-12-08 02:22:00 | 4694.html | 403 |
|  3 | 2023-12-08 02:22:01 | 191.html | 403 |
|  4 | 2023-12-08 02:22:02 | 7948.html | 403 |
+-----+-----+-----+-----+
4 rows in set (0.00 sec)

```

Main table:

```

mysql> select * from main_table;
+---+---+---+---+---+---+
| id | client_id | country | client_ip | is_banned | time_of_day | requested_file |
+---+---+---+---+---+---+
| 61 | 61 | Finland | 174.39.95.3 | 0 | 2023-12-08 18:00:00 | 2550.html
| 62 | 62 | Namibia | 130.238.247.51 | 0 | 2023-12-08 06:00:00 | 9617.html
| 63 | 63 | Somalia | 35.109.208.111 | 0 | 2023-12-08 21:00:00 | 8218.html
| 64 | 64 | Sri Lanka | 46.32.148.190 | 0 | 2023-12-08 18:00:00 | 3582.html
| 65 | 65 | Antigua and Barbuda | 236.14.23.200 | 0 | 2023-12-08 07:00:00 | 1138.html
| 66 | 66 | Ghana | 34.161.237.143 | 0 | 2023-12-08 08:00:00 | 2936.html
| 67 | 67 | North Korea | 53.252.166.41 | 1 | 2023-12-08 10:00:00 | 3890.html
| 68 | 68 | North Korea | 9.16.7.10 | 1 | 2023-12-08 16:00:00 | 4694.html
| 69 | 69 | North Korea | 9.16.7.108 | 1 | 2023-12-08 22:00:00 | 191.html
| 70 | 70 | Jamaica | 112.243.160.190 | 0 | 2023-12-08 12:00:00 | 3199.html
| 71 | 71 | Paraguay | 115.23.103.233 | 0 | 2023-12-08 15:00:00 | 4805.html
| 72 | 72 | Kuwait | 8.195.69.97 | 0 | 2023-12-08 22:00:00 | 1439.html
| 73 | 73 | Vatican City (Holy See) | 209.34.250.71 | 0 | 2023-12-08 01:00:00 | 4901.html
| 74 | 74 | Malawi | 110.151.139.22 | 0 | 2023-12-08 02:00:00 | 4005.html
| 75 | 75 | Sudan | 87.29.105.119 | 1 | 2023-12-08 22:00:00 | 7948.html
| 76 | 76 | Tajikistan | 128.213.14.18 | 0 | 2023-12-08 12:00:00 | 8703.html
| 77 | 77 | Solomon Islands | 155.32.170.24 | 0 | 2023-12-08 13:00:00 | 8926.html
| 78 | 78 | Ethiopia | 116.94.25.168 | 0 | 2023-12-08 15:00:00 | 2828.html
| 79 | 79 | Kuwait | 8.195.69.12 | 0 | 2023-12-08 14:00:00 | 2176.html
| 80 | 80 | Bhutan | 139.199.112.140 | 0 | 2023-12-08 04:00:00 | 7967.html
| 81 | 81 | Unknown | Unknown | 0 | 2023-12-08 02:25:56 | 10.html
+---+---+---+---+---+---+
21 rows in set (0.00 sec)

```

### Error : File Not Found Request:

```

nmalhotr@instance-5:~$ curl -X GET http://34.138.50.144/hw8nirbhgsutil/test-dir/100000002.html
File Not Foundnmalhotr@instance-5:~$ 

```

As we can see when we make a get request for the file that is non existent in the database, we get the following “File Not Found” message.

### Clients:

```
mysql> select * from Clients;
+-----+-----+-----+-----+
| client_id | gender | age   | income |
+-----+-----+-----+-----+
|       61 | Male   | 26-35 | 0-10k  |
|       62 | Male   | 26-35 | 40k-60k |
|       63 | Male   | 17-25 | 0-10k  |
|       64 | Female | 46-55 | 100k-150k |
|       65 | Female | 36-45 | 20k-40k |
|       66 | Female | 36-45 | 10k-20k |
|       67 | Male   | 56-65 | 100k-150k |
|       68 | Female | 0-16  | 100k-150k |
|       69 | Male   | 17-25 | 0-10k  |
|       70 | Female | 0-16  | 40k-60k |
|       71 | Male   | 46-55 | 10k-20k |
|       72 | Male   | 36-45 | 40k-60k |
|       73 | Male   | 36-45 | 0-10k  |
|       74 | Male   | 0-16  | 10k-20k |
|       75 | Male   | 66-75 | 0-10k  |
|       76 | Male   | 76+   | 250k+  |
|       77 | Male   | 46-55 | 40k-60k |
|       78 | Male   | 0-16  | 40k-60k |
|       79 | Female | 36-45 | 250k+  |
|       80 | Female | 66-75 | 0-10k  |
|       81 | Unknown | Unknown | Unknown |
|       82 | Unknown | Unknown | Unknown |
+-----+-----+-----+-----+
22 rows in set (0.00 sec)
```

Main table :

```

mysql> select * from main_table;
+---+-----+-----+-----+-----+-----+
| id | client_id | country | client_ip | is_banned | time_of_day | requested_file |
+---+-----+-----+-----+-----+-----+
| 61 | 61 | Finland | 174.39.95.3 | 0 | 2023-12-08 18:00:00 | 2550.html |
| 62 | 62 | Namibia | 130.238.247.51 | 0 | 2023-12-08 06:00:00 | 9617.html |
| 63 | 63 | Somalia | 35.109.208.111 | 0 | 2023-12-08 21:00:00 | 8218.html |
| 64 | 64 | Sri Lanka | 46.32.148.190 | 0 | 2023-12-08 18:00:00 | 3582.html |
| 65 | 65 | Antigua and Barbuda | 236.14.23.200 | 0 | 2023-12-08 07:00:00 | 1138.html |
| 66 | 66 | Ghana | 34.161.237.143 | 0 | 2023-12-08 08:00:00 | 2936.html |
| 67 | 67 | North Korea | 53.252.166.41 | 1 | 2023-12-08 10:00:00 | 3890.html |
| 68 | 68 | North Korea | 9.16.7.10 | 1 | 2023-12-08 16:00:00 | 4694.html |
| 69 | 69 | North Korea | 9.16.7.108 | 1 | 2023-12-08 22:00:00 | 191.html |
| 70 | 70 | Jamaica | 112.243.160.190 | 0 | 2023-12-08 12:00:00 | 3199.html |
| 71 | 71 | Paraguay | 115.23.103.233 | 0 | 2023-12-08 15:00:00 | 4805.html |
| 72 | 72 | Kuwait | 8.195.69.97 | 0 | 2023-12-08 22:00:00 | 1439.html |
| 73 | 73 | Vatican City (Holy See) | 209.34.250.71 | 0 | 2023-12-08 01:00:00 | 4901.html |
| 74 | 74 | Malawi | 110.151.139.22 | 0 | 2023-12-08 02:00:00 | 4005.html |
| 75 | 75 | Sudan | 87.29.105.119 | 1 | 2023-12-08 22:00:00 | 7948.html |
| 76 | 76 | Tajikistan | 128.213.14.18 | 0 | 2023-12-08 12:00:00 | 8703.html |
| 77 | 77 | Solomon Islands | 155.32.170.24 | 0 | 2023-12-08 13:00:00 | 8926.html |
| 78 | 78 | Ethiopia | 116.94.25.168 | 0 | 2023-12-08 15:00:00 | 2828.html |
| 79 | 79 | Kuwait | 8.195.69.12 | 0 | 2023-12-08 14:00:00 | 2176.html |
| 80 | 80 | Bhutan | 139.199.112.140 | 0 | 2023-12-08 04:00:00 | 7967.html |
| 81 | 81 | Unknown | Unknown | 0 | 2023-12-08 02:25:56 | 10.html |
| 82 | 82 | Unknown | Unknown | 0 | 2023-12-08 02:29:08 | 100000002.html |
+---+-----+-----+-----+-----+-----+
22 rows in set (0.00 sec)

```

Error log:

```

mysql> select * From error_log;
+---+-----+-----+-----+
| id | time_of_request | requested_file | error_code |
+---+-----+-----+-----+
| 1 | 2023-12-08 02:22:00 | 3890.html | 403 |
| 2 | 2023-12-08 02:22:00 | 4694.html | 403 |
| 3 | 2023-12-08 02:22:01 | 191.html | 403 |
| 4 | 2023-12-08 02:22:02 | 7948.html | 403 |
| 5 | 2023-12-08 02:29:09 | 100000002.html | 404 |
+---+-----+-----+-----+
5 rows in set (0.00 sec)

```

501 Method Not Implemented Case :

Now if we make a request other than GET we get the following Method Not Implemented message as follows:

```

nmalhotr@instance-5:~$ curl -X GET http://34.138.50.144/hw8nirbhgsutil/test-dir/100000002.html
File Not Foundnmalhotr@curl -X PUT http://34.138.50.144/hw8nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$ 

```

Clients:

```
mysql> select * from Clients;
+-----+-----+-----+-----+
| client_id | gender | age | income |
+-----+-----+-----+-----+
| 61 | Male | 26-35 | 0-10k |
| 62 | Male | 26-35 | 40k-60k |
| 63 | Male | 17-25 | 0-10k |
| 64 | Female | 46-55 | 100k-150k |
| 65 | Female | 36-45 | 20k-40k |
| 66 | Female | 36-45 | 10k-20k |
| 67 | Male | 56-65 | 100k-150k |
| 68 | Female | 0-16 | 100k-150k |
| 69 | Male | 17-25 | 0-10k |
| 70 | Female | 0-16 | 40k-60k |
| 71 | Male | 46-55 | 10k-20k |
| 72 | Male | 36-45 | 40k-60k |
| 73 | Male | 36-45 | 0-10k |
| 74 | Male | 0-16 | 10k-20k |
| 75 | Male | 66-75 | 0-10k |
| 76 | Male | 76+ | 250k+ |
| 77 | Male | 46-55 | 40k-60k |
| 78 | Male | 0-16 | 40k-60k |
| 79 | Female | 36-45 | 250k+ |
| 80 | Female | 66-75 | 0-10k |
| 81 | Unknown | Unknown | Unknown |
| 82 | Unknown | Unknown | Unknown |
| 83 | Unknown | Unknown | Unknown |
+-----+-----+-----+-----+
23 rows in set (0.00 sec)
```

```
mysql> □
```

Error log:

```
mysql> select * From error_log;
+----+-----+-----+-----+
| id | time_of_request | requested_file | error_code |
+----+-----+-----+-----+
| 1 | 2023-12-08 02:22:00 | 3890.html | 403 |
| 2 | 2023-12-08 02:22:00 | 4694.html | 403 |
| 3 | 2023-12-08 02:22:01 | 191.html | 403 |
| 4 | 2023-12-08 02:22:02 | 7948.html | 403 |
| 5 | 2023-12-08 02:29:09 | 100000002.html | 404 |
| 6 | 2023-12-08 02:32:15 | 102.html | 501 |
+----+-----+-----+-----+
6 rows in set (0.00 sec)
```

Main table:

```
mysql> select * from main_table;
+----+-----+-----+-----+-----+-----+
| id | client_id | country | client_ip | is_banned | time_of_day | requested_file |
+----+-----+-----+-----+-----+-----+
| 61 | 61 | Finland | 174.39.95.3 | 0 | 2023-12-08 18:00:00 | 2550.html |
| 62 | 62 | Namibia | 130.238.247.51 | 0 | 2023-12-08 06:00:00 | 9617.html |
| 63 | 63 | Somalia | 35.109.208.111 | 0 | 2023-12-08 21:00:00 | 8218.html |
| 64 | 64 | Sri Lanka | 46.32.148.190 | 0 | 2023-12-08 18:00:00 | 3582.html |
| 65 | 65 | Antigua and Barbuda | 236.14.23.200 | 0 | 2023-12-08 07:00:00 | 1138.html |
| 66 | 66 | Ghana | 34.161.237.143 | 0 | 2023-12-08 08:00:00 | 2936.html |
| 67 | 67 | North Korea | 53.252.166.41 | 1 | 2023-12-08 10:00:00 | 3890.html |
| 68 | 68 | North Korea | 9.16.7.10 | 1 | 2023-12-08 16:00:00 | 4694.html |
| 69 | 69 | North Korea | 9.16.7.108 | 1 | 2023-12-08 22:00:00 | 191.html |
| 70 | 70 | Jamaica | 112.243.160.190 | 0 | 2023-12-08 12:00:00 | 3199.html |
| 71 | 71 | Paraguay | 115.23.103.233 | 0 | 2023-12-08 15:00:00 | 4805.html |
| 72 | 72 | Kuwait | 8.195.69.97 | 0 | 2023-12-08 22:00:00 | 1439.html |
| 73 | 73 | Vatican City (Holy See) | 209.34.250.71 | 0 | 2023-12-08 01:00:00 | 4901.html |
| 74 | 74 | Malawi | 110.151.139.22 | 0 | 2023-12-08 02:00:00 | 4005.html |
| 75 | 75 | Sudan | 87.29.105.119 | 1 | 2023-12-08 22:00:00 | 7948.html |
| 76 | 76 | Tajikistan | 128.213.14.18 | 0 | 2023-12-08 12:00:00 | 8703.html |
| 77 | 77 | Solomon Islands | 155.32.170.24 | 0 | 2023-12-08 13:00:00 | 8926.html |
| 78 | 78 | Ethiopia | 116.94.25.168 | 0 | 2023-12-08 15:00:00 | 2828.html |
| 79 | 79 | Kuwait | 8.195.69.12 | 0 | 2023-12-08 14:00:00 | 2176.html |
| 80 | 80 | Bhutan | 139.199.112.140 | 0 | 2023-12-08 04:00:00 | 7967.html |
| 81 | 81 | Unknown | Unknown | 0 | 2023-12-08 02:25:56 | 10.html |
| 82 | 82 | Unknown | Unknown | 0 | 2023-12-08 02:29:08 | 100000002.html |
| 83 | 83 | Unknown | Unknown | 0 | 2023-12-08 02:32:15 | 102.html |
+----+-----+-----+-----+-----+
23 rows in set (0.00 sec)
```

When we close the vm all the resource will be removed as follows:

The screenshot shows the Google Cloud Deployment Manager interface. In the center, a modal dialog titled "Delete deployment" is displayed, asking if you want to "Delete my-database and all resources created by it, such as VMs, load balancers and disks" or "Delete my-database, but keep resources created by it". Below the dialog are two buttons: "CANCEL" and "DELETE ALL". The background shows a list of deployments, with one named "my-database" selected.

Deployment will be deleted as follows:

The screenshot shows the Google Cloud Deployment Manager interface after the deployment has been deleted. The list of deployments is empty, and the message "No rows to display" is visible at the bottom.

Once the deployment is deleted, the bucket gets deleted:

The screenshot shows the Google Cloud Storage Buckets list. It displays four buckets that have been deleted: "cdsds561-project-1\_cloudbuild", "gcf-check-files", "hw2nirbhgsutil", and "hw4nirbhgsutil". Each bucket entry includes details like creation date, location type, storage class, and public access status.

Name	Created	Location type	Location	Default storage class	Last modified	Public access	Access control	Protection	Lifecycle rule
cdsds561-project-1_cloudbuild	Nov 24, 2023, 10:04:47 AM	Multi-region	us	Standard	Nov 24, 2023, 10:04:47 AM	Subject to object ACLs	Fine-grained	None	None
gcf-check-files	Oct 4, 2023, 5:55:12 PM	Region	us-east1	Standard	Oct 4, 2023, 5:57:26 PM	▲ Public to internet	Uniform	None	None
hw2nirbhgsutil	Sep 25, 2023, 12:17:57 PM	Region	us-east1	Standard	Sep 27, 2023, 6:00:21 PM	▲ Public to internet	Uniform	None	None
hw4nirbhgsutil	Oct 16, 2023, 7:57:38 PM	Region	us-east1	Standard	Oct 16, 2023, 8:01:28 PM	▲ Public to internet	Uniform	None	None

Once the deployment is deleted, the database instance and database gets deleted :

The screenshot shows the Google Cloud SQL Instances page. At the top, there are tabs for 'SQL' and 'Instances', along with buttons for 'CREATE INSTANCE' and 'MIGRATE DATA'. A 'SHOW INFO PANEL' button is in the top right. Below the tabs is a filter bar with the placeholder 'Enter property name or value'. A table lists one instance: 'my-database' (Enterprise edition, MySQL 8.0, IP 104.196.58.0). Columns include Instance ID, Cloud SQL edition, Type, Public IP address, Private IP address, Instance connection name, High availability, Location, Storage used, Labels, and Actions. The storage usage is shown as 0 B of 100 GB.

Once the deployment is deleted, the Topic and subscription gets deleted:

The screenshot shows the Google Cloud Pub/Sub Topics page. At the top, there are tabs for 'Topics', 'CREATE TOPIC', and 'DELETE'. A 'SHOW INFO PANEL' button is in the top right. Below the tabs are two promotional cards: 'Simplify data lake pipelines with new Pub/Sub Cloud Storage subscriptions' and 'Stream data directly into BigQuery with Pub/Sub'. The main table has 'LIST' and 'METRICS' tabs. It shows a single topic: 'hw3nirbhgsutil' (Topic ID: hw3nirbhgsutil, Encryption key: Google-managed, Topic name: projects/cdsds561-project-1/topics/hw3nirbhgsutil). The retention period is listed as '-'.

Once the deployment is deleted, both the VM Instances gets deleted:

The screenshot shows the Google Cloud VM Instances page. At the top, there are tabs for 'VM instances', 'CREATE INSTANCE', 'IMPORT VM', and 'REFRESH'. A 'LEARN' button is in the top right. The main table has 'INSTANCES', 'OBSERVABILITY', and 'INSTANCE SCHEDULES' tabs. It shows two instances: 'instance-5' and 'instance-6', both located in 'us-east1-b'. The table includes columns for Status, Name, Zone, Recommendations, In use by, Internal IP, External IP, and Connect. A 'Related actions' section is at the bottom.

Once the deployment is deleted, service account gets deleted:

The screenshot shows the Google Cloud Service Accounts page. At the top, there are tabs for 'Service accounts', 'CREATE SERVICE ACCOUNT', 'DELETE', 'MANAGE ACCESS', and 'REFRESH'. A 'LEARN' button is in the top right. The main table has a header for Email, Status, Name, Description, Key ID, Key creation date, OAuth 2 Client ID, and Actions. It lists several service accounts, all of which are enabled. The table includes rows for 'cdsds561-project-1@appspot.gserviceaccount.com', 'cloud-sql-authorization@cdsds561-project-1.iam.gserviceaccount.com', 'cloud-sql-authorize-vm@cdsds561-project-1.iam.gserviceaccount.com', 'cloud-sql-deployment-manager-v@cdsds561-project-1.iam.gserviceaccount.com', '49459990174@compute@developer.gserviceaccount.com', 'dataflow-admin-service-vm-hw7@cdsds561-project-1.iam.gserviceaccount.com', 'nirbhhwbucketpermission@cdsds561-project-1.iam.gserviceaccount.com', 'pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com', and 'pubsubserviceacc-hw3-nirbh@cdsds561-project-1.iam.gserviceaccount.com'.

We can also delete the deployment using the following gcloud command as follows :

```
C:\Users\nirbh\AppData\Local\Google\Cloud SDK>gcloud deployment-manager deployments delete my-database
The following deployments will be deleted:
- my-database

Do you want to continue (y/N)? y

Waiting for delete [operation-1702003772711-60bf6a24760a3-a111da6f-49b6f09d]...done.
Delete operation operation-1702003772711-60bf6a24760a3-a111da6f-49b6f09d completed successfully.
```

Also if the deletion doesn't happen try to delete the bucket directory and then delete the following deployment.