GOOGLE CLOUD FUNDAMENTALS: GETTING STARTED WITH CLOUD STORAGE AND CLOUD SQL

OBJECTIVES

- Create a Cloud Storage bucket and place an image into it.

- Create a Cloud SQL instance and configure it.

- Connect to the Cloud SQL instance from a web server.

- Use the image in the Cloud Storage bucket on a web page.

STEP 1

Sign in to google cloud platform with the provided username and password from qwiklabs,

STEP 2

Click to activate cloud shell, if prompted, click continue

TO DEPLOY A WEB SERVER VM INSTANCE

```
gcloud beta compute --project=qwiklabs-gcp-03-83e4c7166e6c instances create bloghost -
-zone=us-central1-a --machine-type=e2-medium --subnet=default --network-tier=PREMIUM -
-metadata=startup-script=apt-get\ update$'\n'apt-get\ install\ apache2\ php\ php-
mysql\ -y$'\n'service\ apache2\ restart --maintenance-policy=MIGRATE --service-
account=612002053111-compute@developer.gserviceaccount.com --
scopes=https://www.googleapis.com/auth/devstorage.read_only,https://www.googleapis.com
/auth/logging.write,https://www.googleapis.com/auth/monitoring.write,https://www.googl
eapis.com/auth/servicecontrol,https://www.googleapis.com/auth/service.management.reado
nly,https://www.googleapis.com/auth/trace.append --tags=http-server --image=debian-9-
stretch-v20200902 --image-project=debian-cloud --boot-disk-size=10GB --boot-disk-
type=pd-standard --boot-disk-device-name=bloghost --reservation-affinity=any

gcloud compute --project=qwiklabs-gcp-03-83e4c7166e6c firewall-rules create default-
allow-http --direction=INGRESS --priority=1000 --network=default --action=ALLOW --
rules=tcp:80 --source-ranges=0.0.0.0/0 --target-tags=http-server
```

TO CREATE A CLOUD STORAGE BUCKET

For convenience, enter your chosen location into an environment variable called LOCATION. Enter one of these commands:

```
export LOCATION=US
```

In Cloud Shell, the DEVSHELL_PROJECT_ID environment variable contains your project ID. Enter this command to make a bucket named after your project ID:

```
gsutil mb -l $LOCATION gs://$DEVSHELL_PROJECT_ID
```

Retrieve a banner image from a publicly accessible Cloud Storage location:

```
gsutil cp gs://cloud-training/gcpfci/my-excellent-
blog.png my-excellent-blog.png
```

Copy the banner image to your newly created Cloud Storage bucket:

```
gsutil cp my-excellent-blog.png
gs://$DEVSHELL_PROJECT_ID/my-excellent-blog.png
```

Modify the Access Control List of the object you just created so that it is readable by everyone:

```
gsutil acl ch -u allUsers:R
gs://$DEVSHELL_PROJECT_ID/my-excellent-blog.png
```

TO CREATE A CLOUD SQL INSTANCE

1. In the GCP Console, on the **Navigation menu** (), click **SQL**.

2. Click **Create instance**.

3. For **Choose a database engine**, select **MySQL**.

4. For **Instance ID,** type **blog-db**, and for **Root password** type a password of your choice.

Choose a password that you remember. There's no need to obscure the password because you'll use mechanisms to connect that aren't open access to everyone.
  5. Set the region and zone assigned by Qwiklabs.
This is the same region and zone into which you launched the **bloghost** instance. The best performance is achieved by placing the client and the database close to each other.
  6. Click **Create**.
Wait for the instance to finish deploying. It will take a few minutes.
  7. Click on the name of the instance, **blog-db,** to open its details page.

8. From the SQL instances details page, copy the **Public IP address** for your SQL instance to a text editor for use later in this lab.

9. Click on **Users** menu on the left-hand side, and then click **ADD USER ACCOUNT**.

10. For **User name**, type `blogdbuser`

11. For **Password**, type a password of your choice. Make a note of it.

12. Click **Create** to create the user account in the database.

Wait for the user to be created.

13. Click the **Connections** tab, and then click **Add network**.

If you are offered the choice between a **Private IP** connection and a **Public IP** connection, choose **Public IP** for purposes of this lab. The **Private IP** feature is in beta at the time this lab was written.

The **Add network** button may be grayed out if the user account creation is not yet complete.

14. For **Name**, type `web front end`

15. For **Network**, type the external IP address of your **bloghost** VM instance, followed by `/32`

16. Click **Done** to finish defining the authorized network.

17. Click **Save** to save the configuration change.

TO CONFIGURE AN APPLICATION IN A COMPUTE ENGINE INSTANCE TO USE CLOUD SQL

1. On the **Navigation menu** (), click **Compute Engine** > **VM instances**.

2. In the VM instances list, click **SSH** in the row for your VM instance **bloghost**.

3. In your ssh session on **bloghost**, change your working directory to the document root of the web server:

```
cd /var/www/html
```

4. Use the **nano** text editor to edit a file called **index.php**:

```
sudo nano index.php
```
5. Paste the content below into the file:

```
<html>
<head><title>Welcome to my excellent blog</title></head>
<body>
<h1>Welcome to my excellent blog</h1>
<?php
 $dbserver = "CLOUDSQLIP";
$dbuser = "blogdbuser";
$dbpassword = "DBPASSWORD";
// In a production blog, we would not store the MySQL
// password in the document root. Instead, we would store it in a
// configuration file elsewhere on the web server VM instance.

$conn = new mysqli($dbserver, $dbuser, $dbpassword);

if (mysqli_connect_error()) {
        echo ("Database connection failed: " . mysqli_connect_error());
} else {
        echo ("Database connection succeeded.");
}
?>
</body></html>
```
In a later step, you will insert your Cloud SQL instance's IP address and your database password into this file. For now, leave the file unmodified.

6. Press **Ctrl+O**, and then press **Enter** to save your edited file.

7. Press **Ctrl+X** to exit the nano text editor.

8. Restart the web server:

```
sudo service apache2 restart
```
9. Open a new web browser tab and paste into the address bar your **bloghost** VM instance's external IP address followed by **/index.php**. The URL will look like this:

```
35.192.208.2/index.php
```
Be sure to use the external IP address of your VM instance followed by /index.php. Do not use the VM instance's internal IP address. Do not use the sample IP address shown here.

When you load the page, you will see that its content includes an error message beginning with the words:

```
Database connection failed: ...
```
This message occurs because you have not yet configured PHP's connection to your Cloud SQL instance.

10. Return to your ssh session on **bloghost**. Use the **nano** text editor to edit **index.php** again.

```
sudo nano index.php
```

11. In the **nano** text editor, replace CLOUDSQLIP with the Cloud SQL instance Public IP address that you noted above. Leave the quotation marks around the value in place.

12. In the **nano** text editor, replace DBPASSWORD with the Cloud SQL database password that you defined above. Leave the quotation marks around the value in place.

13. Press **Ctrl+O**, and then press **Enter** to save your edited file.

14. Press **Ctrl+X** to exit the nano text editor.

15. Restart the web server:

```
sudo service apache2 restart
```

16. Return to the web browser tab in which you opened your **bloghost** VM instance's external IP address. When you load the page, the following message appears:

```
Database connection succeeded.
```

TO CONFIGURE AN APPLICATION IN A COMPUTE ENGINE INSTANCE TO USE CLOUD STORAGE OBJECT

1. In the GCP Console, click **Storage > Browser**.

2. Click on the bucket that is named after your GCP project.

3. In this bucket, there is an object called **my-excellent-blog.png**. Copy the URL behind the link icon that appears in that object's **Public access** column, or behind the words "Public link" if shown.

If you see neither a link icon nor a "Public link", try refreshing the browser. If you still do not see a link icon, return to Cloud Shell and confirm that your attempt to change the object's Access Control list with the **gsutil acl ch** command was successful.

4. Return to your ssh session on your **bloghost** VM instance.

5. Enter this command to set your working directory to the document root of the web server:

```
cd /var/www/html
```

6. Use the **nano** text editor to edit **index.php**:

```
sudo nano index.php
```

7. Use the arrow keys to move the cursor to the line that contains the **h1** element. Press **Enter** to open up a new, blank screen line, and then paste the URL you copied earlier into the line.

8. Paste this HTML markup immediately before the URL:

```
<img src='
```

9. Place a closing single quotation mark and a closing angle bracket at the end of the URL:

```
'>
```

The resulting line will look like this:

```
<img src='https://storage.googleapis.com/qwiklabs-gcp-0005e186fa559a09/my-
excellent-blog.png'>
```

The effect of these steps is to place the line containing `<img src='...'>` immediately before the line containing `<h1>...</h1>`

Do not copy the URL shown here. Instead, copy the URL shown by the Storage browser in your own Cloud Platform project.

10. Press **Ctrl+O**, and then press **Enter** to save your edited file.

11. Press **Ctrl+X** to exit the nano text editor.

12. Restart the web server:

```
sudo service apache2 restart
```

13. Return to the web browser tab in which you opened your **bloghost** VM instance's external IP address. When you load the page, its content now includes a banner image.