

1. Ensure proper API's are enabled. This includes: Cloud Storage; Cloud Build API; Google Container Registry API; and Cloud Datastore API

a. “APIs & Services”, “Library”

The screenshot shows the Google Cloud Platform dashboard. On the left, there's a sidebar with various project-level links like Cloud overview, View all products, Billing, IAM & Admin, Marketplace, Compute Engine, Kubernetes Engine, Cloud Storage, BigQuery, and VPC network. Below this sidebar, the main content area has tabs for DASHBOARD, ACTIVITY, and RECOMMENDATIONS. Under the DASHBOARD tab, there's a 'Project info' card with details like Project name: deploying-an-41-c426bd14 and Enabled APIs & services: 54. To the right of this is an 'APIs' card showing requests per second over time. Further down is a 'Resources' card listing BigQuery, SQL, and Compute Engine. On the far right, there are cards for Google Cloud Platform status, Billing, and Monitoring.

2. Type each service into the search bar individually, and click to “enable” each API for the following: Cloud Storage; Cloud Build API; Google Container Registry API; and Cloud Datastore API

The screenshot shows the API Library search results for 'Cloud Build API'. The search bar at the top contains 'Cloud Build API'. Below the search bar, the results page title is 'Welcome to the API Library'. The main content area shows a single result: 'Cloud Build API' with a description: 'Google Cloud's continuous integration (CI) and continuous delivery (CD) platform, lets you build software quickly across multiple environments. Get complete control over defining custom workflows for building, testing, and deploying across multiple environments, serverless, Kubernetes, or Firebase.' There are also links for 'Documentation' and 'APIs'.

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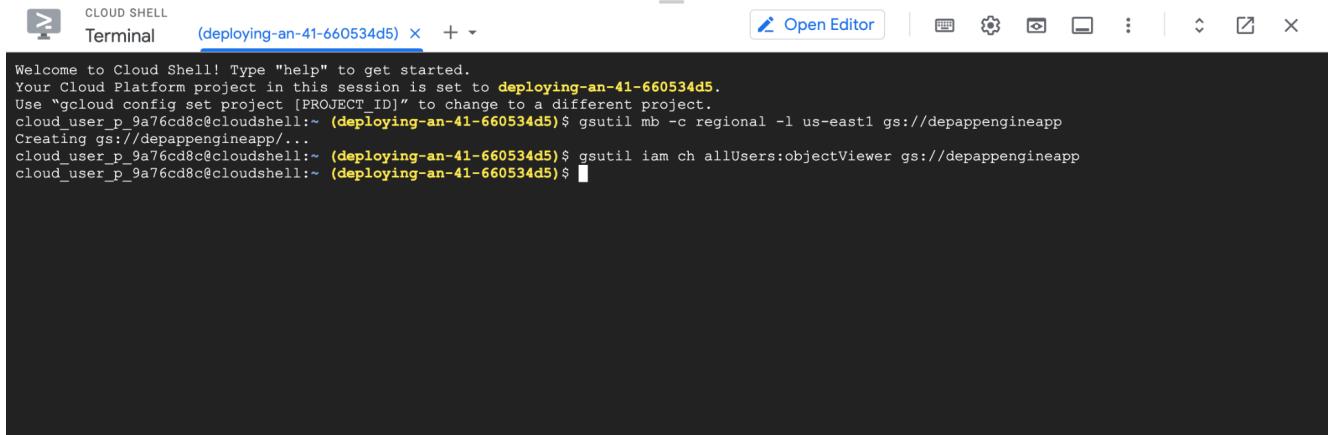
2. Create a bucket for Cloud Storage, and use Cloud Shell to give the bucket proper permissions for the files to be brought into

a. Towards upper right hand corner click the Cloud Shell icon, and upon start up, select “Start Cloud Shell”

```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to deploying-an-41-660534d5.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil mb -c regional -l us-east1 gs://<BUCKET NAME>
Creating gs://depappengineapp...
cloud_user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$
```

c. By default Cloud Storage buckets created are private. To make the bucket public, add roles for allusers, and Object Viewer, with the below command; press “enter”

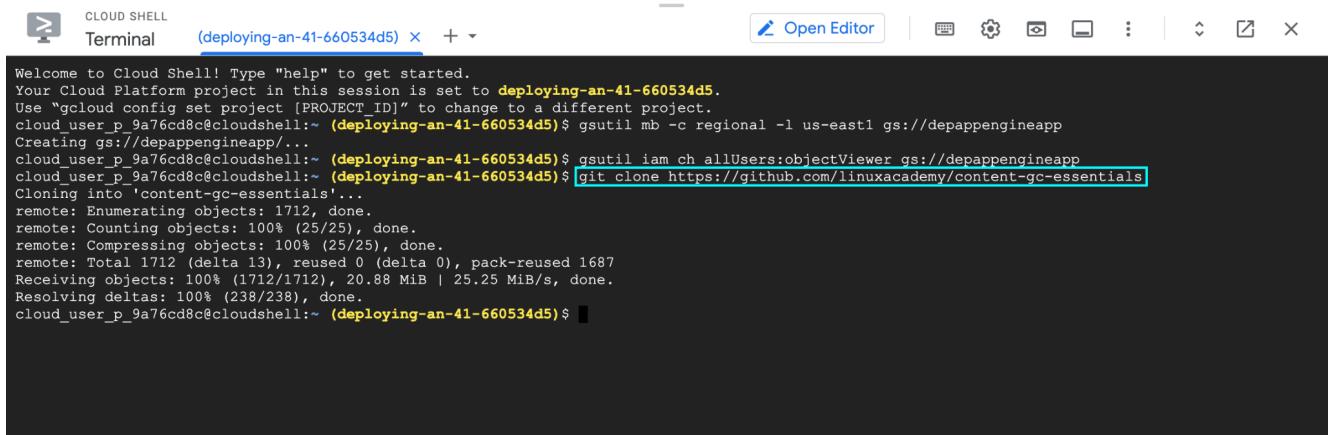
- i. gsutil iam ch allUsers:objectViewer gs://<BUCKET NAME>



```
Welcome to Cloud Shell! Type "help" to get started.  
Your Cloud Platform project in this session is set to deploying-an-41-660534d5.  
Use "gcloud config set project [PROJECT_ID]" to change to a different project.  
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil mb -c regional -l us-east1 gs://depappengineapp  
Creating gs://depappengineapp/...  
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil iam ch allUsers:objectViewer gs://depappengineapp  
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$
```

3. Clone the application files

- Use the following command to clone the application files:
git clone
<https://github.com/linuxacademy/content-gc-essentials>



```
Welcome to Cloud Shell! Type "help" to get started.  
Your Cloud Platform project in this session is set to deploying-an-41-660534d5.  
Use "gcloud config set project [PROJECT_ID]" to change to a different project.  
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil mb -c regional -l us-east1 gs://depappengineapp  
Creating gs://depappengineapp/...  
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil iam ch allUsers:objectViewer gs://depappengineapp  
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ git clone https://github.com/linuxacademy/content-gc-essentials  
Cloning into 'content-gc-essentials'...  
remote: Enumerating objects: 1712, done.  
remote: Counting objects: 100% (25/25), done.  
remote: Compressing objects: 100% (25/25), done.  
remote: Total 1712 (delta 13), reused 0 (delta 0), pack-reused 1687  
Receiving objects: 100% (1712/1712), 20.88 MiB | 25.25 MiB/s, done.  
Resolving deltas: 100% (238/238), done.  
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$
```

4. Double check that the application file folder is in Cloud Storage bucket

- Use command "ls", and "cd", followed by the folder name

```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to deploying-an-41-660534d5.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil mb -c regional -l us-east1 gs://depappengineapp
Creating gs://depappengineapp...
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil iam ch allUsers:objectViewer gs://depappengineapp
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ git clone https://github.com/linuxacademy/content-gc-essentials
Cloning into 'content-gc-essentials'...
remote: Enumerating objects: 1712, done.
remote: Counting objects: 100% (25/25), done.
remote: Compressing objects: 100% (25/25), done.
remote: Total 1712 (delta 13), reused 0 (delta 0), pack-reused 1687
Receiving objects: 100% (1712/1712), 20.88 MiB | 25.25 MiB/s, done.
Resolving deltas: 100% (238/238), done.
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ ls
content-gc-essentials README-cloudshell.txt
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ cd content-gc-essentials
cloud user_p_9a76cd8c@cloudshell:~/content-gc-essentials (deploying-an-41-660534d5)$
```

- b. To view all the files located inside the application file folder, use the “ls” command again, along with command “cd”, followed by the project name

```
Your Cloud Platform project in this session is set to deploying-an-41-660534d5.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil mb -c regional -l us-east1 gs://depappengineapp
Creating gs://depappengineapp...
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil iam ch allUsers:objectViewer gs://depappengineapp
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ git clone https://github.com/linuxacademy/content-gc-essentials
Cloning into 'content-gc-essentials'...
remote: Enumerating objects: 1712, done.
remote: Counting objects: 100% (25/25), done.
remote: Compressing objects: 100% (25/25), done.
remote: Total 1712 (delta 13), reused 0 (delta 0), pack-reused 1687
Receiving objects: 100% (1712/1712), 20.88 MiB | 25.25 MiB/s, done.
Resolving deltas: 100% (238/238), done.
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ ls
content-gc-essentials README-cloudshell.txt
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ cd content-gc-essentials
cloud user_p_9a76cd8c@cloudshell:~/content-gc-essentials (deploying-an-41-660534d5)$ ls
app-engine-lab cloud-functions-sql-lab gke-lab-01 gke-lab-03 pubsub-streaming-lab
automl-vision-lab cloud-storage-lifecycle-lab gke-lab-02 gke-lab-04
cloud user_p_9a76cd8c@cloudshell:~/content-gc-essentials (deploying-an-41-660534d5)$ cd app-engine-lab
cloud user_p_9a76cd8c@cloudshell:~/content-gc-essentials/app-engine-lab (deploying-an-41-660534d5)$
```

5. Launch the code editor to change the configuration of the application files

- a. Selecting the “open editor” icon shown below

```
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil mb -c regional -l us-east1 gs://depappengineapp
Creating gs://depappengineapp...
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ gsutil iam ch allUsers:objectViewer gs://depappengineapp
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ git clone https://github.com/linuxacademy/content-gc-essentials
Cloning into 'content-gc-essentials'...
remote: Enumerating objects: 1712, done.
remote: Counting objects: 100% (25/25), done.
remote: Compressing objects: 100% (25/25), done.
remote: Total 1712 (delta 13), reused 0 (delta 0), pack-reused 1687
Receiving objects: 100% (1712/1712), 20.88 MiB | 25.25 MiB/s, done.
Resolving deltas: 100% (238/238), done.
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ ls
content-gc-essentials README-cloudshell.txt
cloud user_p_9a76cd8c@cloudshell:~ (deploying-an-41-660534d5)$ cd content-gc-essentials
cloud user_p_9a76cd8c@cloudshell:~/content-gc-essentials (deploying-an-41-660534d5)$ ls
app-engine-lab cloud-functions-sql-lab gke-lab-01 gke-lab-03 pubsub-streaming-lab
automl-vision-lab cloud-storage-lifecycle-lab gke-lab-02 gke-lab-04
cloud user_p_9a76cd8c@cloudshell:~/content-gc-essentials (deploying-an-41-660534d5)$ cd app-engine-lab
cloud user_p_9a76cd8c@cloudshell:~/content-gc-essentials/app-engine-lab (deploying-an-41-660534d5)$ ls
appengine_config.py app.yaml assets config.py env images lib main.py musicgallery requirements.txt styles tempfile2.py
cloud user_p_9a76cd8c@cloudshell:~/content-gc-essentials/app-engine-lab (deploying-an-41-660534d5)$
```

- b. Open the “config.py” file

```

content-gc-essentials > app-engine-lab > config.py
1 # Copyright 2016 Google Inc.
2 #
3 # Licensed under the Apache License, Version 2.0 (the "License").
4 # You may obtain a copy of the License at
5 #     http://www.apache.org/licenses/LICENSE-2.0
6 #
7 # Unless required by applicable law or agreed to in writing, software
8 # distributed under the License is distributed on an "AS IS" BASIS,
9 # WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
10 # See the License for the specific language governing permissions and
11 # limitations under the License.
12 #
13 #
14 #####
15 #
16 # This file contains all of the configuration values for the application.
17 # Update this file with the values for your specific Google Cloud project.
18 # You can create and manage projects at https://console.developers.google.com
19 #
20 #
21 # There are two different ways to store the data in the application.
22 # You can choose 'datastore', or 'cloudsql'. Be sure to
23 # configure the respective settings for the one you choose below.
24 # You do not have to configure the other data backend. If unsure, choose
25 # 'datastore' as it does not require any additional configuration.
26 DATA_BACKEND = 'datastore'
27 #
28 # Google Cloud Project ID. This can be found on the 'Overview' page at
29 # https://console.developers.google.com
30 PROJECT_ID = 'deploying-an-41-660534d5'
31 #
32 # SQLAlchemy configuration
33 # Replace user, pass, host, and database with the respective values of your
34 # Cloud SQL instance.
35 SQLALCHEMY_DATABASE_URI = \
36     'mysql+pymysql://user:password@host/database'
37 #
38 # Google Cloud Storage and upload settings.
39 # Typically, you'll name your bucket the same as your project. To create a
40 # bucket:
41 #
42 #     $ gsutil mb gs://<your-bucket-name>
43 #
44 # You also need to make sure that the default ACL is set to public-read,
45 #     $ gsutil acl ch -u allUsers:R gs://<your-bucket-name>/<file>

```

- c. Change the “project ID” on line 30, to the ID name highlighted in command line

```

content-gc-essentials > app-engine-lab > config.py > ...
21 # There are two different ways to store the data in the application.
22 # You can choose 'datastore', or 'cloudsql'. Be sure to
23 # configure the respective settings for the one you choose below.
24 # You do not have to configure the other data backend. If unsure, choose
25 # 'datastore' as it does not require any additional configuration.
26 DATA_BACKEND = 'datastore'
27 #
28 # Google Cloud Project ID. This can be found on the 'Overview' page at
29 # https://console.developers.google.com
30 PROJECT_ID = 'deploying-an-41-660534d5'
31 #
32 # SQLAlchemy configuration
33 # Replace user, pass, host, and database with the respective values of your
34 # Cloud SQL instance.
35 SQLALCHEMY_DATABASE_URI = \
36     'mysql+pymysql://user:password@host/database'
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38 # Google Cloud Storage and upload settings.
39 # Typically, you'll name your bucket the same as your project. To create a
40 # bucket:
41 #
42 #     $ gsutil mb gs://<your-bucket-name>
43 #
44 # You also need to make sure that the default ACL is set to public-read,
45 #     $ gsutil acl ch -u allUsers:R gs://<your-bucket-name>/<file>

```

- d.
- e. Change “Cloud Storage Bucket” on line 51, to name you gave bucket upon creation

The screenshot shows the Google Cloud Shell Editor interface. The left sidebar displays a file tree under 'CLOUD_USER_P_9A76CD8C'. The current file being edited is 'config.py' in the 'app-engine-lab' directory. The code in 'config.py' is as follows:

```
content-gc-essentials > app-engine-lab > config.py > ...
36 |     'mysql+pymysql://user:password@host/database'
37 |
38 # Google Cloud Storage and upload settings.
39 # Typically, you'll name your bucket the same as your project. To create a
40 # bucket:
41 #
42 # $ gsutil mb gs://<your-bucket-name>
43 #
44 # You also need to make sure that the default ACL is set to public-read,
45 # otherwise users will not be able to see their upload images:
46 #
47 # $ gsutil defacl set public-read gs://<your-bucket-name>
48 #
49 # You can adjust the max content length and allow extensions settings to allow
50 # larger or more varied file types if desired.
51 CLOUD_STORAGE_BUCKET = 'depappengineapp'
52 MAX_CONTENT_LENGTH = 8 * 1024 * 1024
53 ALLOWED_EXTENSIONS = set(['png', 'jpg', 'jpeg', 'gif'])
54
```

f. “Save” the editor script

The screenshot shows the Google Cloud Shell Editor interface with the 'File' menu open. The 'Save' option is highlighted. The code in 'config.py' remains the same as in the previous screenshot.

```
content-gc-essentials > app-engine-lab > config.py > ...
36 |     'mysql+pymysql://user:password@host/database'
37 |
38 # Google Cloud Storage and upload settings.
39 # Typically, you'll name your bucket the same as your project. To create a
40 # bucket:
41 #
42 # $ gsutil mb gs://<your-bucket-name>
43 #
44 # You also need to make sure that the default ACL is set to public-read,
45 # otherwise users will not be able to see their upload images:
46 #
47 # $ gsutil defacl set public-read gs://<your-bucket-name>
48 #
49 # You can adjust the max content length and allow extensions settings to allow
50 # larger or more varied file types if desired.
51 CLOUD_STORAGE_BUCKET = 'depappengineapp'
52 MAX_CONTENT_LENGTH = 8 * 1024 * 1024
53 ALLOWED_EXTENSIONS = set(['png', 'jpg', 'jpeg', 'gif'])
54
```

6. Deploy the app

- Use command: gcloud app deploy
- Type in “Y” to continue to deploy the app

The screenshot shows a terminal window in Google Cloud Shell. The user is running the command `gcloud app deploy`. A warning message is displayed: "WARNING: Creating an App Engine application for a project is irreversible and the region cannot be changed. More information about regions is at <https://cloud.google.com/appengine/docs/locations>." The user is prompted to choose a region, listing options from [1] to [9] and a cancel option. The user enters '11' and then '2'. The deployment process starts, showing the configuration file path and service details. Finally, the user is asked if they want to continue with 'Y'.

```
cloud user p_9a76cd8c@cloudshell:~/content-gc-essentials/app-engine-lab (deploying-an-41-660534d5)$ gcloud app deploy
You are creating an app for project [deploying-an-41-660534d5].
WARNING: Creating an App Engine application for a project is irreversible and the region
cannot be changed. More information about regions is at
<https://cloud.google.com/appengine/docs/locations>.

Please choose the region where you want your App Engine application located:

[1] australia-southeast1 (supports standard and flexible and search_api)
[2] us-central      (supports standard and flexible and search_api)
[3] us-east1        (supports standard and flexible and search_api)
[4] us-east4        (supports standard and flexible and search_api)
[5] us-west1        (supports standard and flexible)
[6] us-west2        (supports standard and flexible and search_api)
[7] us-west3        (supports standard and flexible and search_api)
[8] us-west4        (supports standard and flexible and search_api)
[9] cancel

Please enter your numeric choice: 11
Please enter a value between 1 and 9: 2

Creating App Engine application in project [deploying-an-41-660534d5] and region [us-central]....done.
Services to deploy:

descriptor:          [/home/cloud_user_p_9a76cd8c/content-gc-essentials/app-engine-lab/app.yaml]
source:              [/home/cloud_user_p_9a76cd8c/content-gc-essentials/app-engine-lab]
target project:      [deploying-an-41-660534d5]
target service:      [default]
target version:     [20221009t201236]
target url:         [https://deploying-an-41-660534d5.uc.r.appspot.com]
target service account: [App Engine default service account]

Do you want to continue (Y/n)? Y
```

7. Test the app

- Upon completion of deployment, click on app link to open and view application

The screenshot shows a terminal window in Google Cloud Shell. The deployment process is shown in progress, with file uploads to Google Cloud Storage at various percentages (5%, 10%, 15%, 21%, 26%, 31%, 36%, 41%, 46%, 51%, 57%, 62%, 67%, 72%, 77%, 82%, 87%, 93%, 98%, 100%). After the upload is complete, the service is updated and traffic is set. The deployed service URL is shown as `[https://deploying-an-41-660534d5.uc.r.appspot.com]`. Instructions for streaming logs and viewing the application in a browser are provided.

```
BEGINNING DEPLOYMENT OF SERVICE [default]...
Uploading 681 files to Google Cloud Storage
5%
10%
15%
21%
26%
31%
36%
41%
46%
51%
57%
62%
67%
72%
77%
82%
87%
93%
98%
100%
100%
File upload done.
Updating service [default]...done.
Setting traffic split for service [default]...done.
Deployed service [default] to [https://deploying-an-41-660534d5.uc.r.appspot.com]

You can stream logs from the command line by running:
$ gcloud app logs tail -s default

To view your application in the web browser run:
$ gcloud app browse
cloud_user_p_9a76cd8c@cloudshell:~/content-gc-essentials/app-engine-lab (deploying-an-41-660534d5)$
```

b. Application opens

