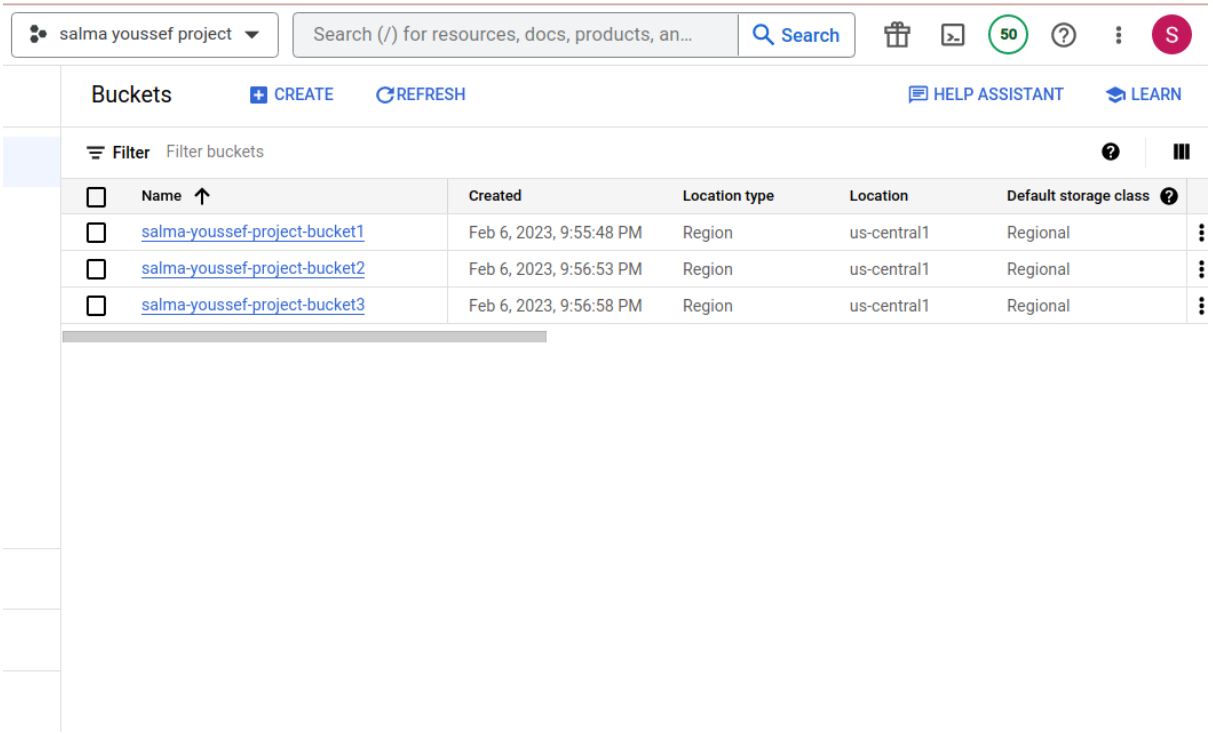
Lab 4.1

Q1:

Q1/1 - creating 3 buckets:

```
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil mb -c regional -l us-centr
al1 gs://salma-youssef-project-bucket1
Creating gs://salma-youssef-project-bucket1/...
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil mb -c regional -l us-centr
al1 gs://salma-youssef-project-bucket2
Creating gs://salma-youssef-project-bucket2/...
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil mb -c regional -l us-centr
al1 gs://salma-youssef-project-bucket3
Creating gs://salma-youssef-project-bucket3/...
salmamyoussef@salmamyoussef-Satellite-C55-B:~$
```



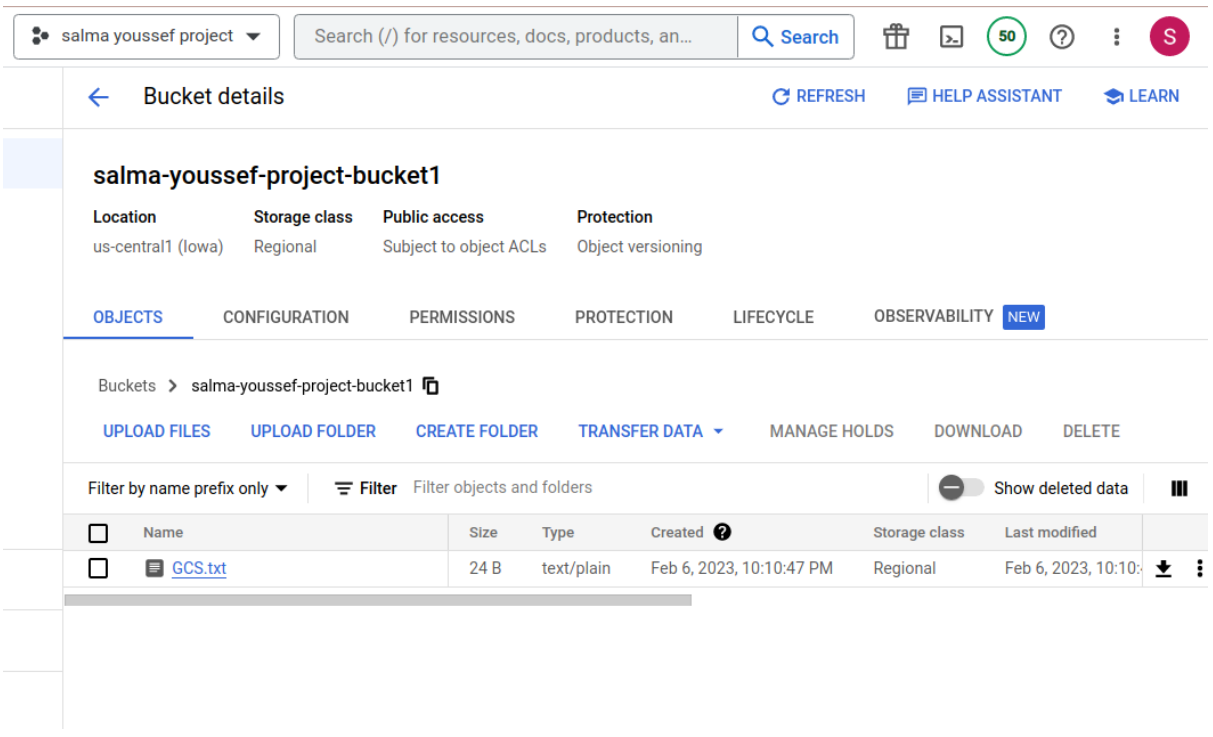
Q1/2 - enable the versioning for them:

```
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil versioning set on gs://sal
ma-youssef-project-bucket1
Enabling versioning for gs://salma-youssef-project-bucket1/...
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil versioning set on gs://sal
ma-youssef-project-bucket2
Enabling versioning for gs://salma-youssef-project-bucket2/...
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil versioning set on gs://sal
ma-youssef-project-bucket3
Enabling versioning for gs://salma-youssef-project-bucket3/...
salmamyoussef@salmamyoussef-Satellite-C55-B:~$
```

Protection	
Object versioning	On
Retention policy	None
Encryption type	Google-managed key
Object lifecycle	
Lifecycle rules	None

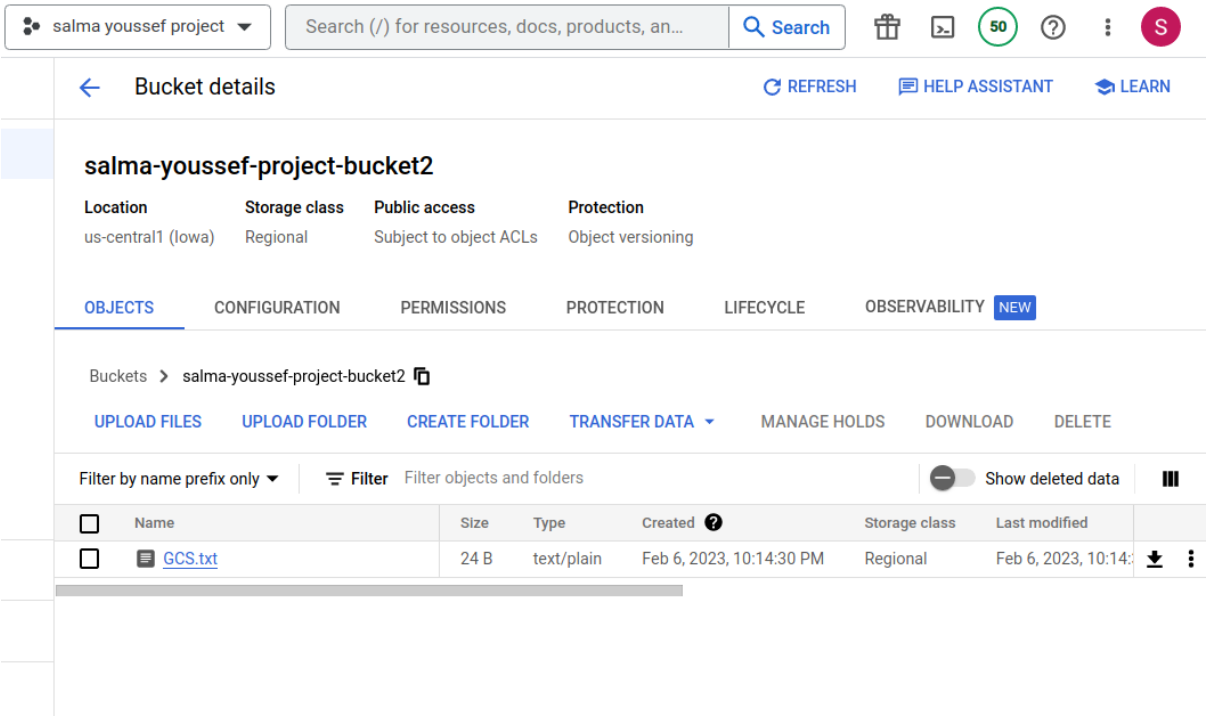
Q1/3 - uploading a file from the local machine to the bucket1:

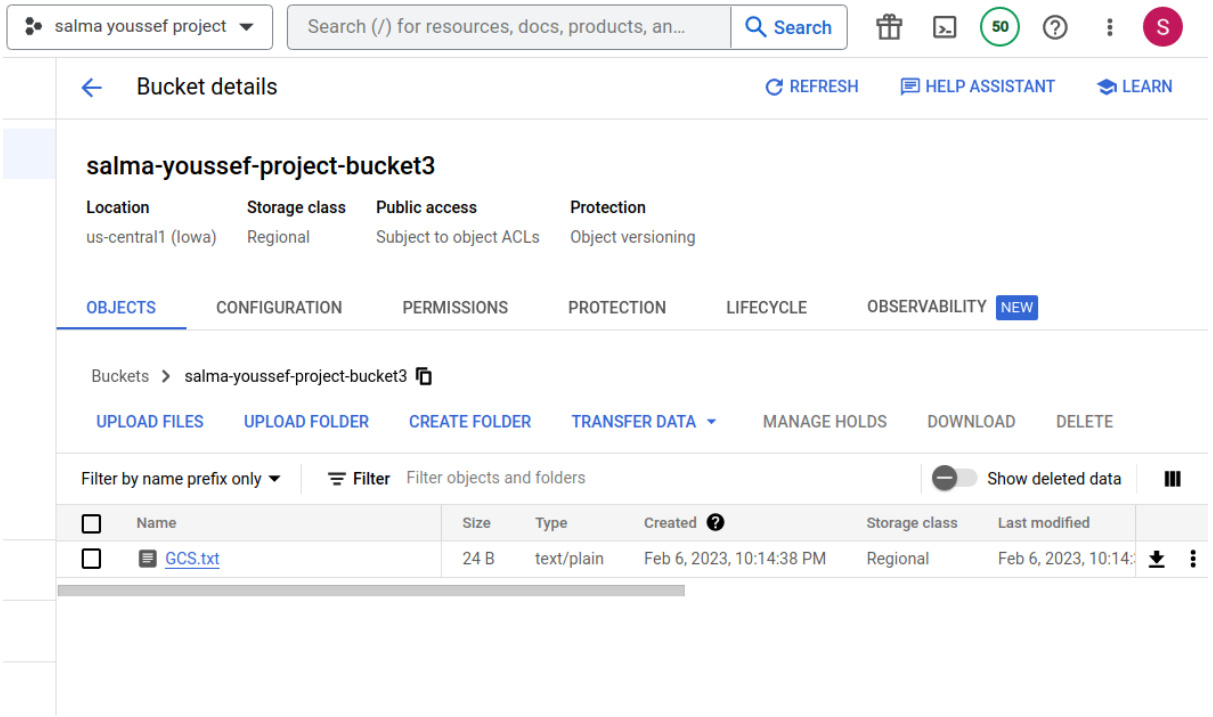
```
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil cp ~/Desktop/GCS.txt gs://
salma-youssef-project-bucket1/
Copying file:///home/salmamyoussef/Desktop/GCS.txt [Content-Type=text/plain]...
/ [1 files][   24.0 B/   24.0 B]
Operation completed over 1 objects/24.0 B.

salmamyoussef@salmamyoussef-Satellite-C55-B:~$
```



copying the file into both bucket2 and bucket3:

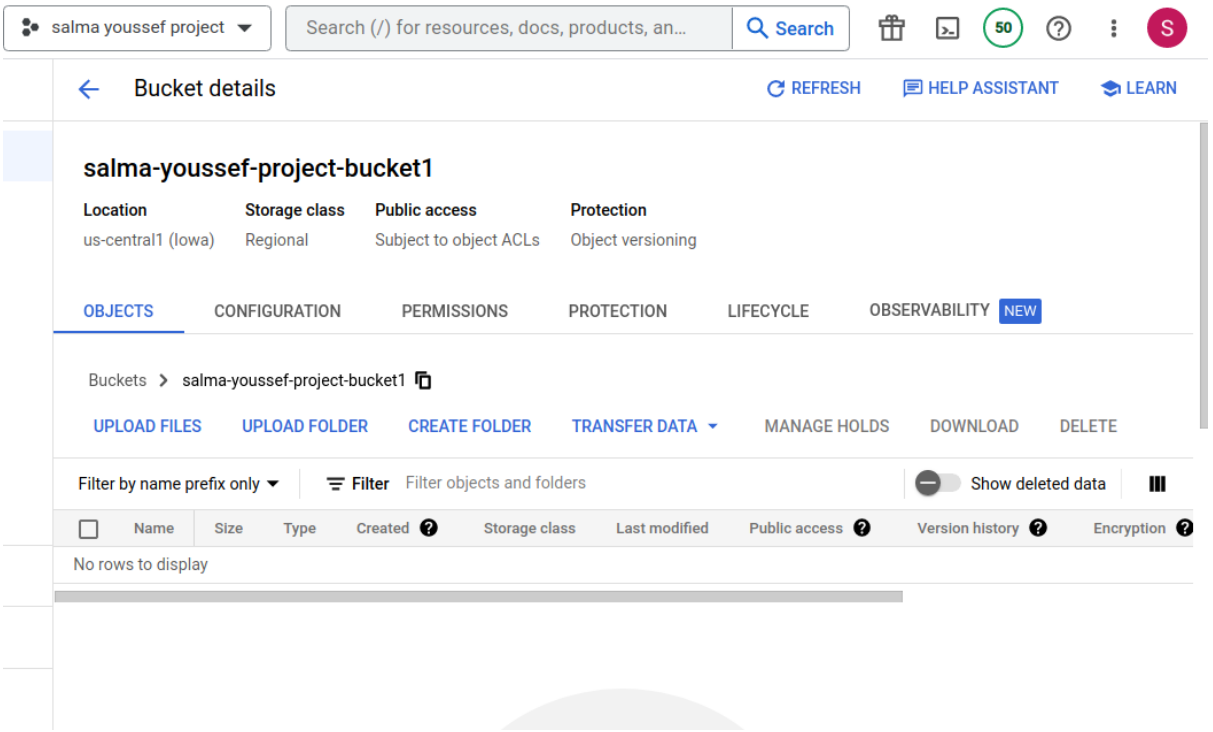
```
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil cp gs://salma-youssef-proj
ect-bucket1/GCS.txt gs://salma-youssef-project-bucket2/
Copying gs://salma-youssef-project-bucket1/GCS.txt [Content-Type=text/plain]...
- [1 files][   24.0 B/   24.0 B]
Operation completed over 1 objects/24.0 B.

salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil cp gs://salma-youssef-proj
ect-bucket1/GCS.txt gs://salma-youssef-project-bucket3/
Copying gs://salma-youssef-project-bucket1/GCS.txt [Content-Type=text/plain]...
- [1 files][   24.0 B/   24.0 B]
Operation completed over 1 objects/24.0 B.

salmamyoussef@salmamyoussef-Satellite-C55-B:~$
```



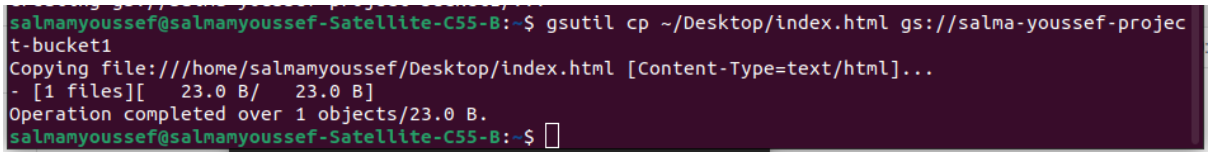


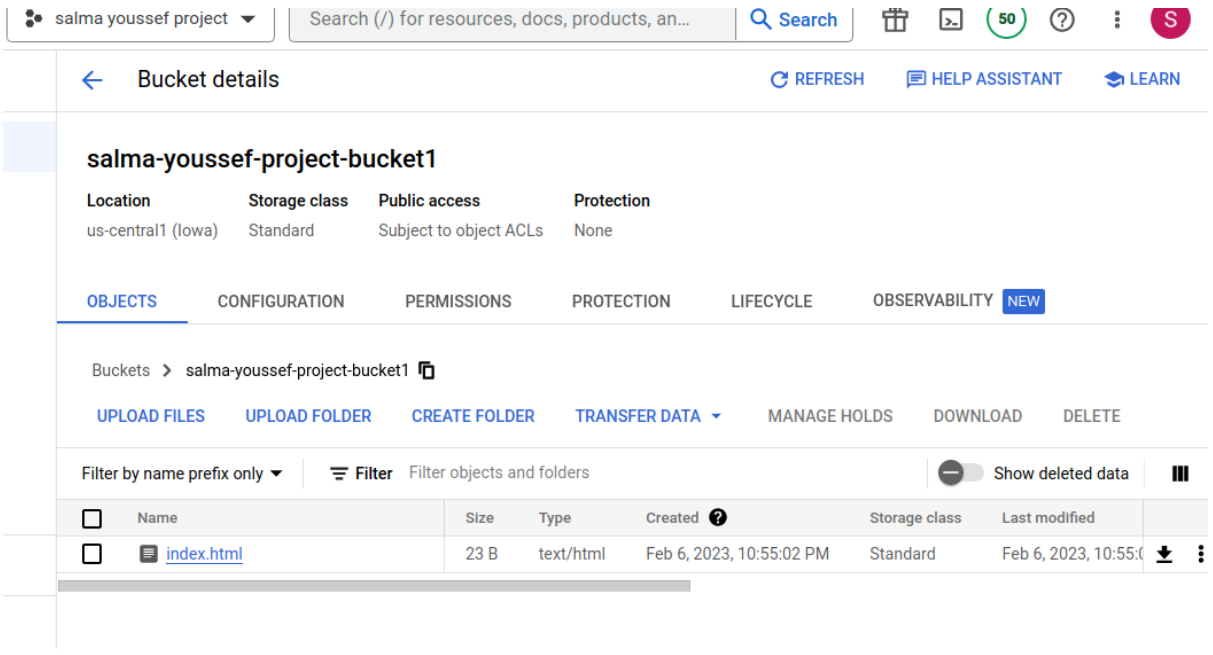
Q1/4 - bucket1 file Deletion:

```
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil rm gs://salma-youssef-proj
ect-bucket1/GCS.txt
Removing gs://salma-youssef-project-bucket1/GCS.txt...
/ [1 objects]
Operation completed over 1 objects.

salmamyoussef@salmamyoussef-Satellite-C55-B:~$
```


salma youssef project
Search (/) for resources, docs, products, an...
Search
50
Bucket details
REFRESH
HELP ASSISTANT
LEARN
salma-youssef-project-bucket1
Location
us-central1 (Iowa)
Storage class
Regional
Public access
Subject to object ACLs
Protection
Object versioning
OBJECTS
CONFIGURATION
PERMISSIONS
PROTECTION
LIFECYCLE
OBSERVABILITY
NEW
Buckets
salma-youssef-project-bucket1
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
No rows to display

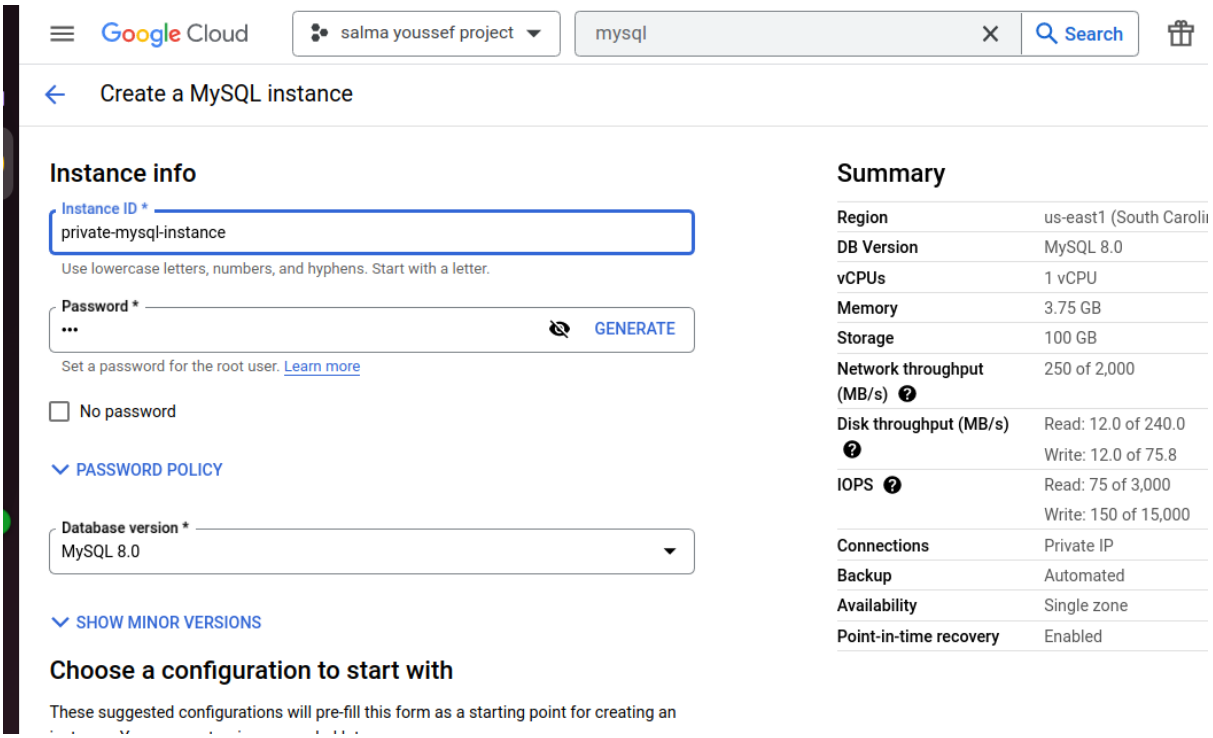
Q2:

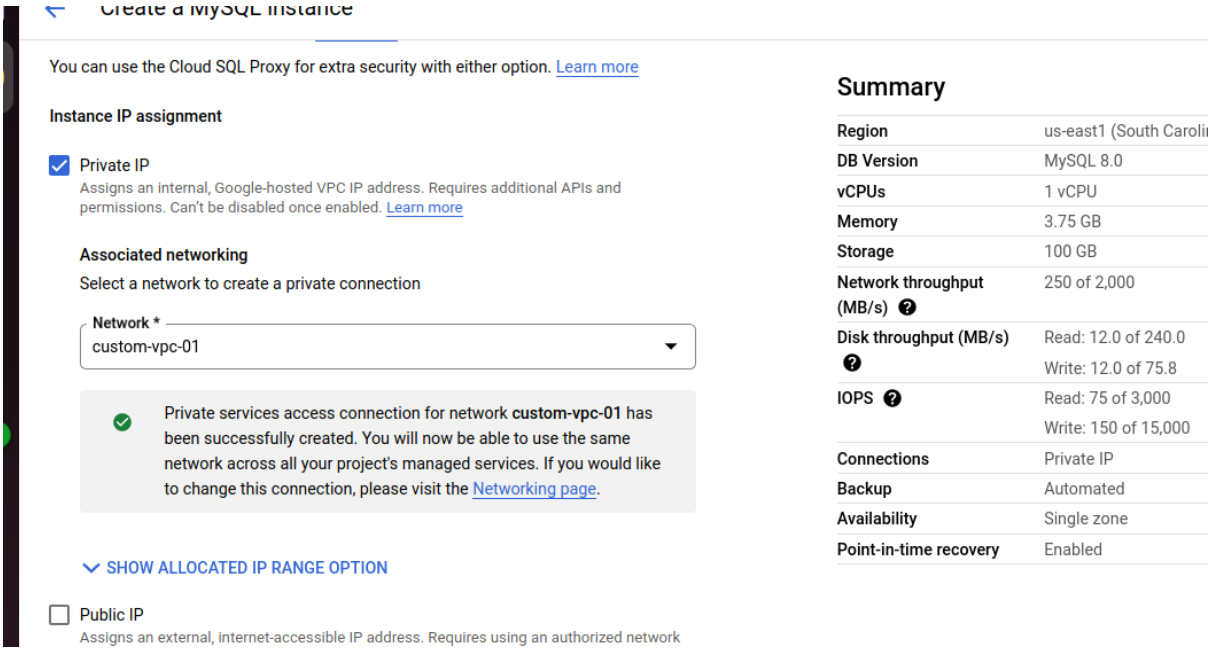

salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gsutil cp ~/Desktop/index.html gs://salma-youssef-projec
t-bucket1
Copying file:///home/salmamyoussef/Desktop/index.html [Content-Type=text/html]...
- [1 files][23.0 B/ 23.0 B]
Operation completed over 1 objects/23.0 B.
salmamyoussef@salmamyoussef-Satellite-C55-B:~$


salma youssef project
Search (/) for resources, docs, products, an...
Search
50
Bucket details
REFRESH
HELP ASSISTANT
LEARN
salma-youssef-project-bucket1
Location
us-central1 (Iowa)
Storage class
Standard
Public access
Subject to object ACLs
Protection
None
OBJECTS
CONFIGURATION
PERMISSIONS
PROTECTION
LIFECYCLE
OBSERVABILITY
NEW
Buckets
salma-youssef-project-bucket1
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
index.html
23 B
text/html
Feb 6, 2023, 10:55:02 PM
Standard
Feb 6, 2023, 10:55:

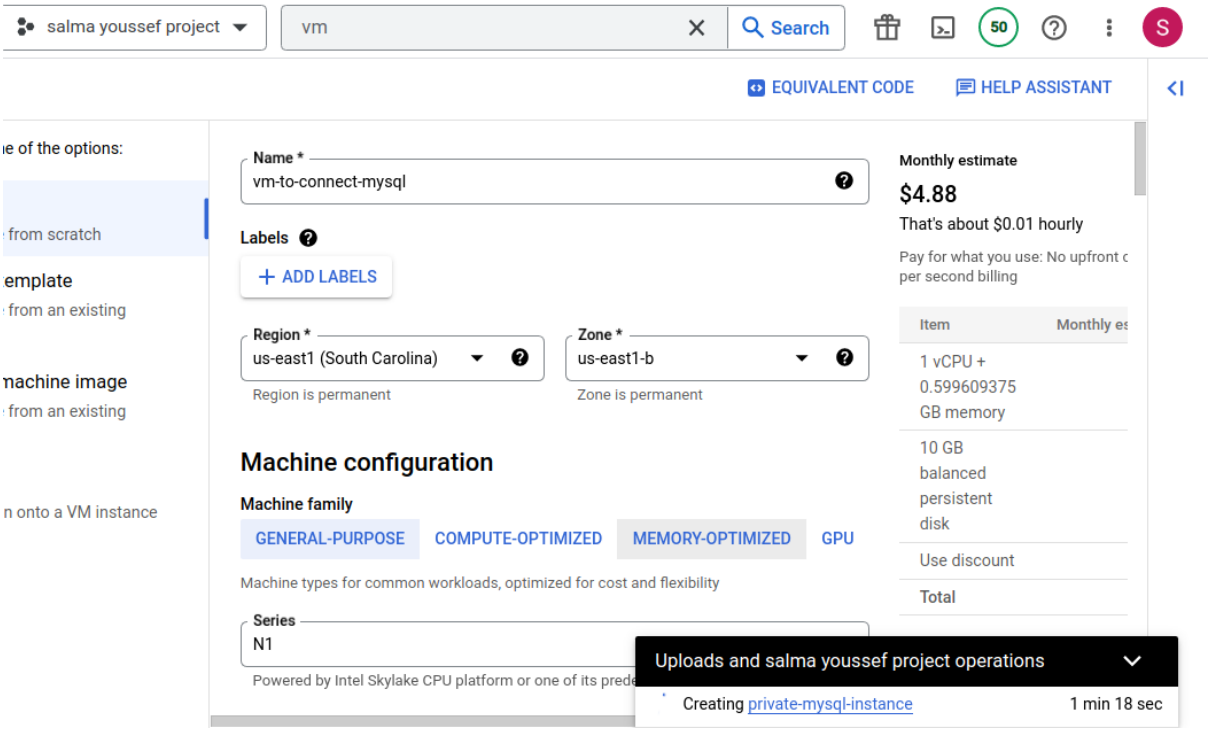
Q3:

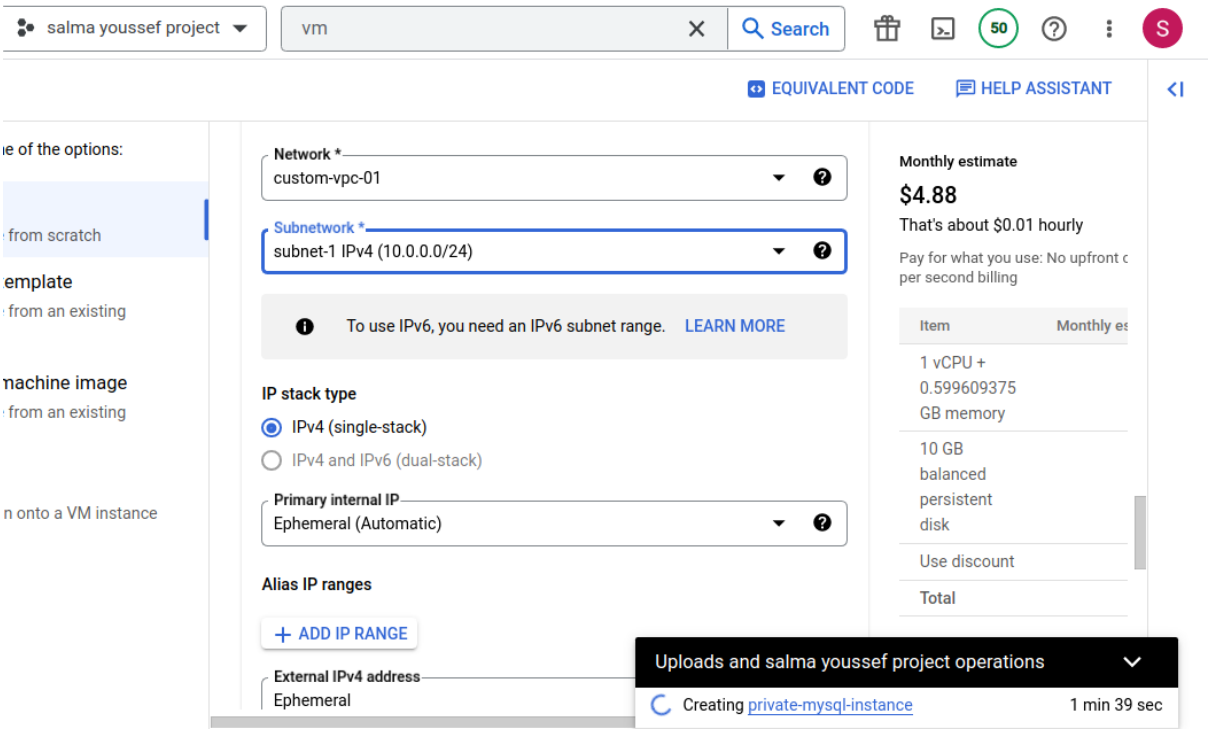
create mysql instance on GCP:





create a vm to access mysql instance:

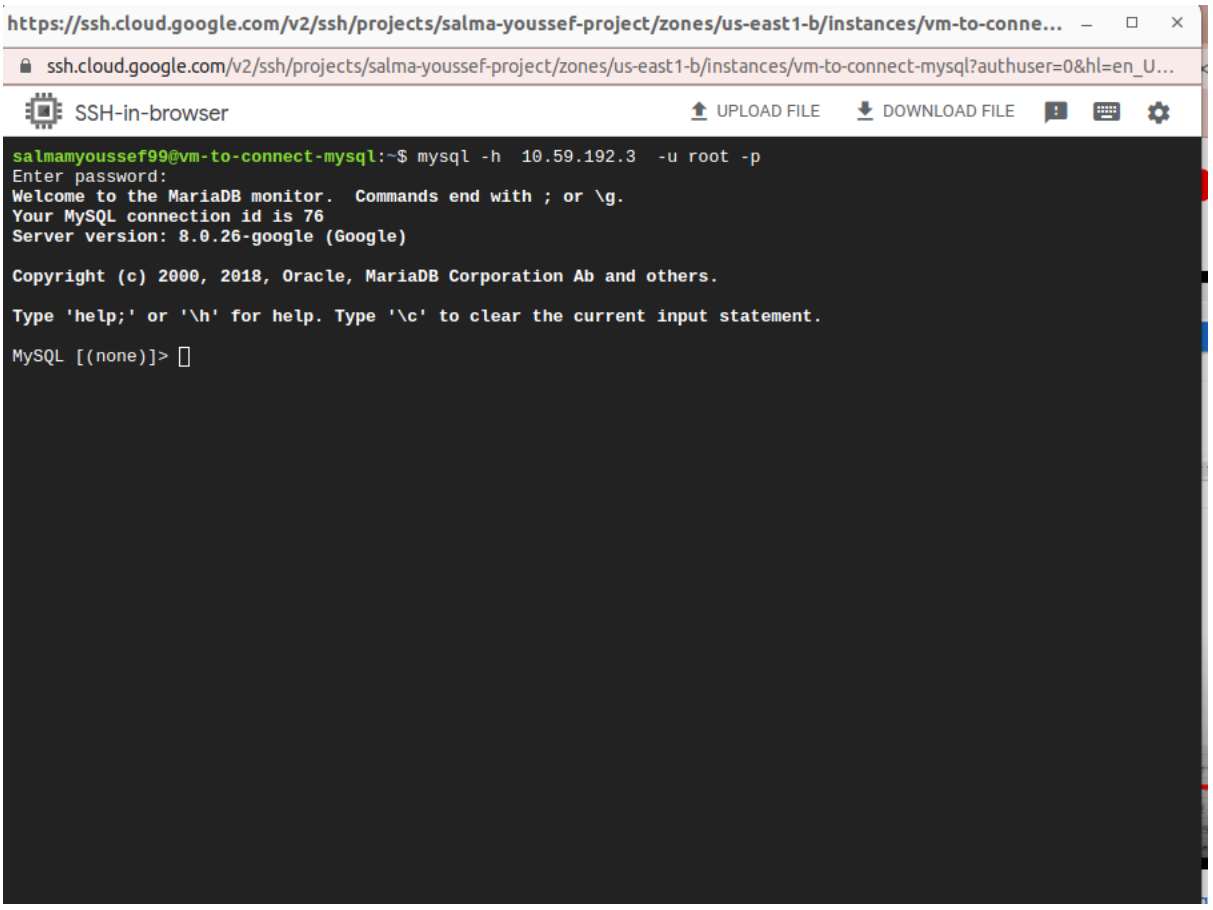




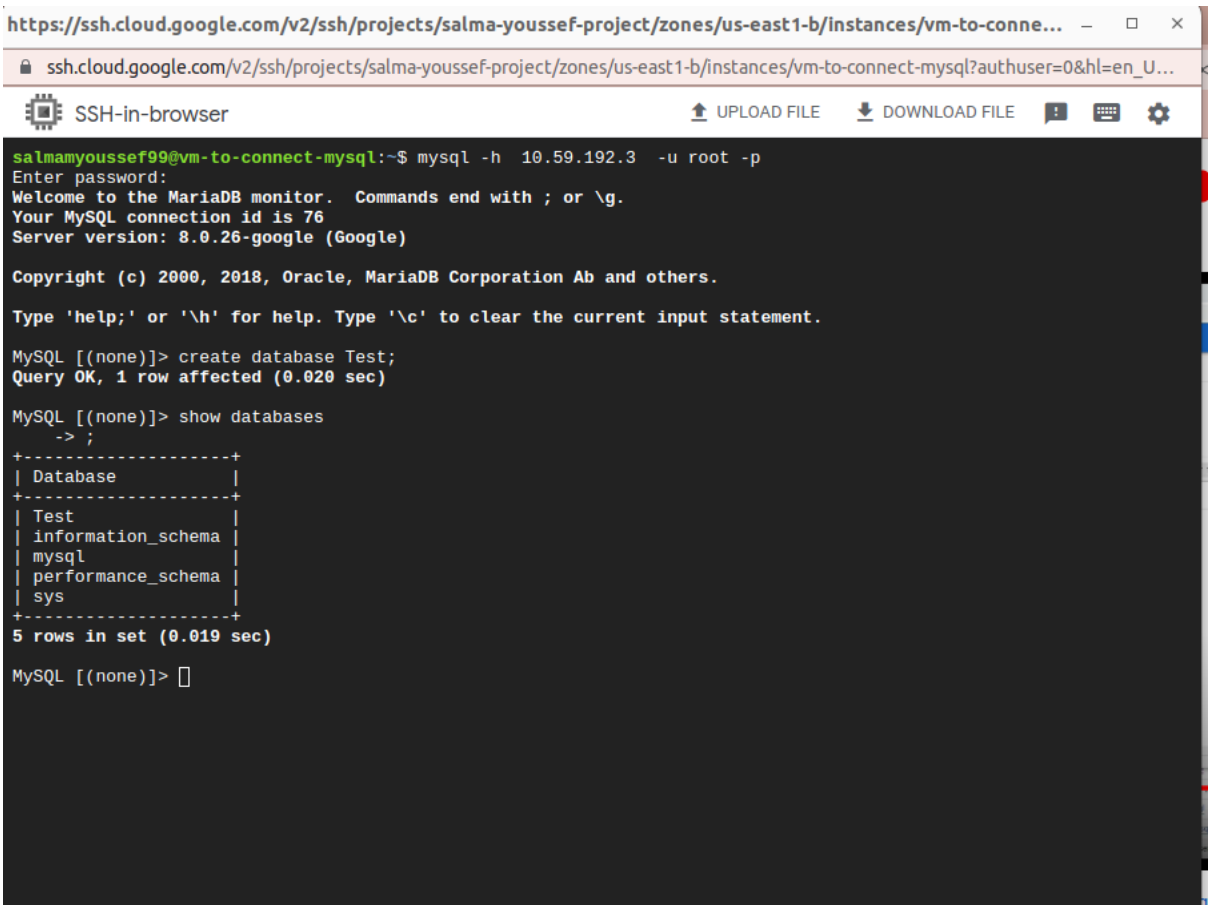
installing mysql client on vm:

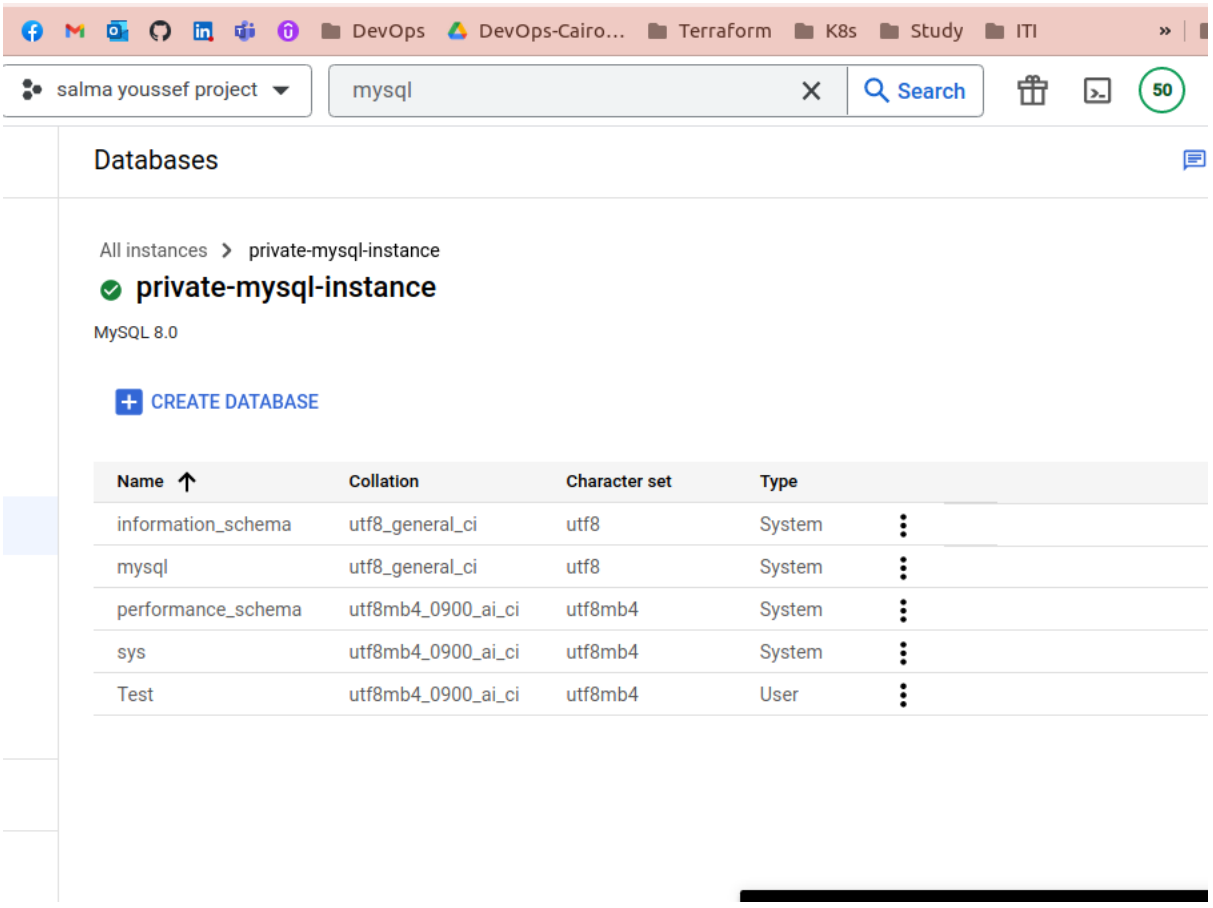
```
salmamyoussef99@vm-to-connect-mysql:~$ sudo apt-get  install default-mysql-client
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libconfig-inifiles-perl libdbd-mariadb-perl libdbi-perl libgdbm-compat4 libmariadb3 libperl5.32
  libterm-readkey-perl mariadb-client-10.5 mariadb-client-core-10.5 mariadb-common mysql-common perl
  perl-modules-5.32
Suggested packages:
  libclone-perl libmldbm-perl libnet-daemon-perl libsql-statement-perl perl-doc libterm-readline-gnu-perl
  | libterm-readline-perl-perl make libtap-harness-archive-perl
The following NEW packages will be installed:
  default-mysql-client libconfig-inifiles-perl libdbd-mariadb-perl libdbi-perl libgdbm-compat4 libmariadb3
  libperl5.32 libterm-readkey-perl mariadb-client-10.5 mariadb-client-core-10.5 mariadb-common mysql-common
  perl perl-modules-5.32
0 upgraded, 14 newly installed, 0 to remove and 17 not upgraded.
Need to get 2503 kB/10.8 MB of archives.
After this operation, 86.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://deb.debian.org/debian bullseye/main amd64 mariadb-common all 1:10.5.18-0+deb11u1 [36.9 kB]
Get:2 http://deb.debian.org/debian bullseye/main amd64 libmariadb3 amd64 1:10.5.18-0+deb11u1 [176 kB]
Get:3 http://deb.debian.org/debian bullseye/main amd64 mariadb-client-core-10.5 amd64 1:10.5.18-0+deb11u1 [784 kB]
Get:4 http://deb.debian.org/debian bullseye/main amd64 mariadb-client-10.5 amd64 1:10.5.18-0+deb11u1 [1506 kB]
Fetched 2503 kB in 0s (20.1 MB/s)
Selecting previously unselected package perl-modules-5.32.
(Reading database ... 54776 files and directories currently installed.)
Preparing to unpack .../00-perl-modules-5.32_5.32.1-4+deb11u2_all.deb ...
Unpacking perl-modules-5.32 (5.32.1-4+deb11u2) ...
Selecting previously unselected package libgdbm-compat4:amd64.
Preparing to unpack .../01-libgdbm-compat4_1.19-2_amd64.deb ...
Unpacking libgdbm-compat4:amd64 (1.19-2) ...
Selecting previously unselected package libperl5.32:amd64.
Preparing to unpack .../02-libperl5.32_5.32.1-4+deb11u2_amd64.deb ...
Unpacking libperl5.32:amd64 (5.32.1-4+deb11u2) ...
Selecting previously unselected package perl.
Preparing to unpack .../03-perl_5.32.1-4+deb11u2_amd64.deb ...
Unpacking perl (5.32.1-4+deb11u2) ...
Selecting previously unselected package libconfig-inifiles-perl.
```

connect to mysql:



create a new database:


https://ssh.cloud.google.com/v2/ssh/projects/salma-youssef-project/zones/us-east1-b/instances/vm-to-conne...
ssh.cloud.google.com/v2/ssh/projects/salma-youssef-project/zones/us-east1-b/instances/vm-to-connect-mysql?authuser=0&hl=en_U...
SSH-in-browser
UPLOAD FILE
DOWNLOAD FILE
salmamyoussef99@vm-to-connect-mysql:~$ mysql -h 10.59.192.3 -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MySQL connection id is 76
Server version: 8.0.26-google (Google)
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
MySQL [(none)]> create database Test;
Query OK, 1 row affected (0.020 sec)
MySQL [(none)]> show databases
-> ;
+--------------------+
| Database |
+--------------------+
| Test |
| information_schema |
| mysql |
| performance_schema |
| sys |
+--------------------+
5 rows in set (0.019 sec)
MySQL [(none)]>


DevOps
DevOps-Cairo...
Terraform
K8s
Study
ITI
salma youssef project
mysql
Search
50
Databases
All instances
private-mysql-instance
private-mysql-instance
MySQL 8.0
CREATE DATABASE
Name
Collation
Character set
Type
information_schema utf8_general_ci utf8 System
mysql utf8_general_ci utf8 System
performance_schema utf8mb4_0900_ai_ci utf8mb4 System
sys utf8mb4_0900_ai_ci utf8mb4 System
Test utf8mb4_0900_ai_ci utf8mb4 User

Lab 4.2

Q1:

tag to be uploaded image:

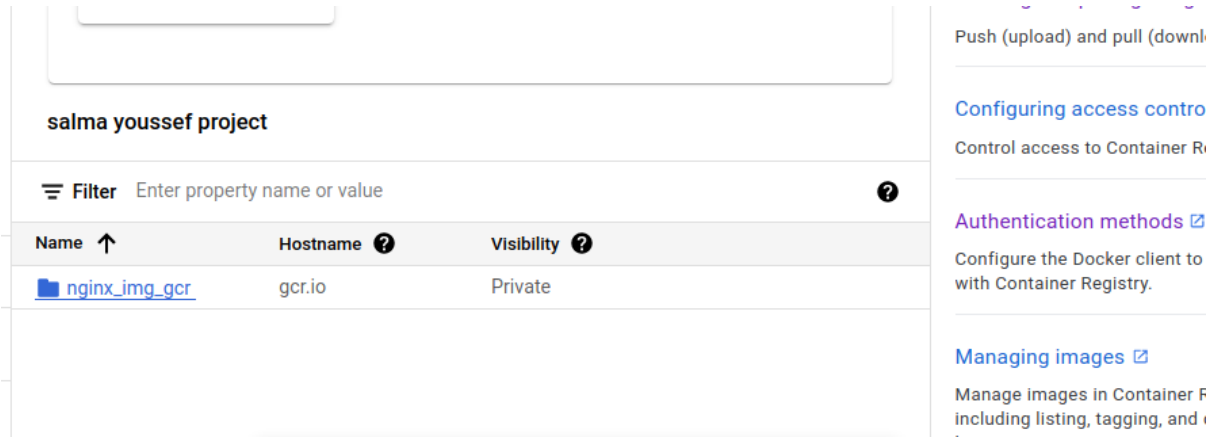
```
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ sudo docker tag nginx gcr.io/salma-youssef-proje
ct/nginx_img_gcr:v1
```

push the image:

```
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ sudo docker push  gcr.io/salma-youssef-project/n
ginx_img_gcr:v1
The push refers to repository [gcr.io/salma-youssef-project/nginx_img_gcr]
c72d75f45e5b: Layer already exists
9a0ef04f57f5: Layer already exists
d13aea24d2cb: Layer already exists
2b3eec357807: Layer already exists
2dadbc36c170: Layer already exists
8a70d251b653: Layer already exists
v1: digest: sha256:9a821cadb1b13cb782ec66445325045b2213459008a41c72d8d87cde94b33c8c size: 1570
salmamyoussef@salmamyoussef-Satellite-C55-B:~$
```

the image:

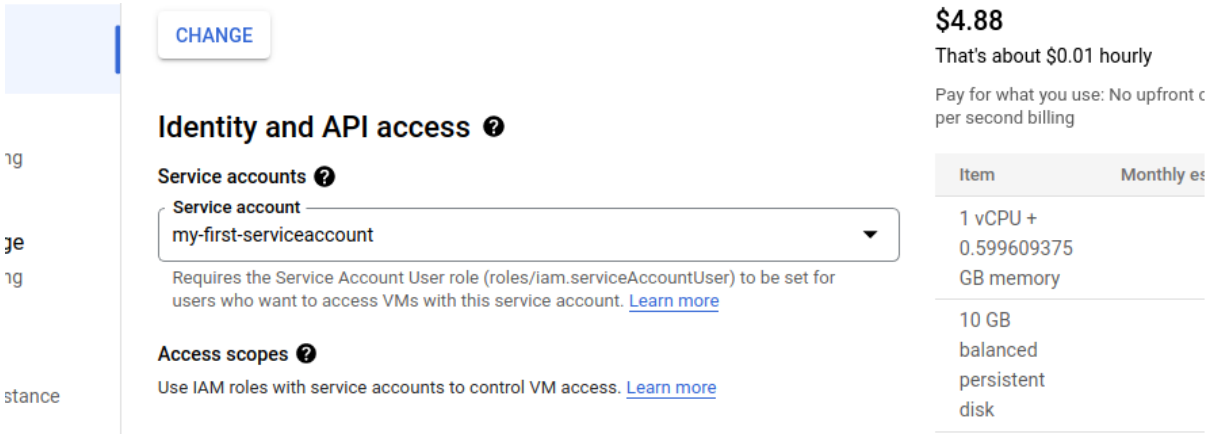
```
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gcloud container images list-tags gcr.io/salma-y
oussef-project/nginx_img_gcr
DIGEST        TAGS  TIMESTAMP
9a821cadb1b1  v1    2022-12-21T13:28:36
salmamyoussef@salmamyoussef-Satellite-C55-B:~$
```

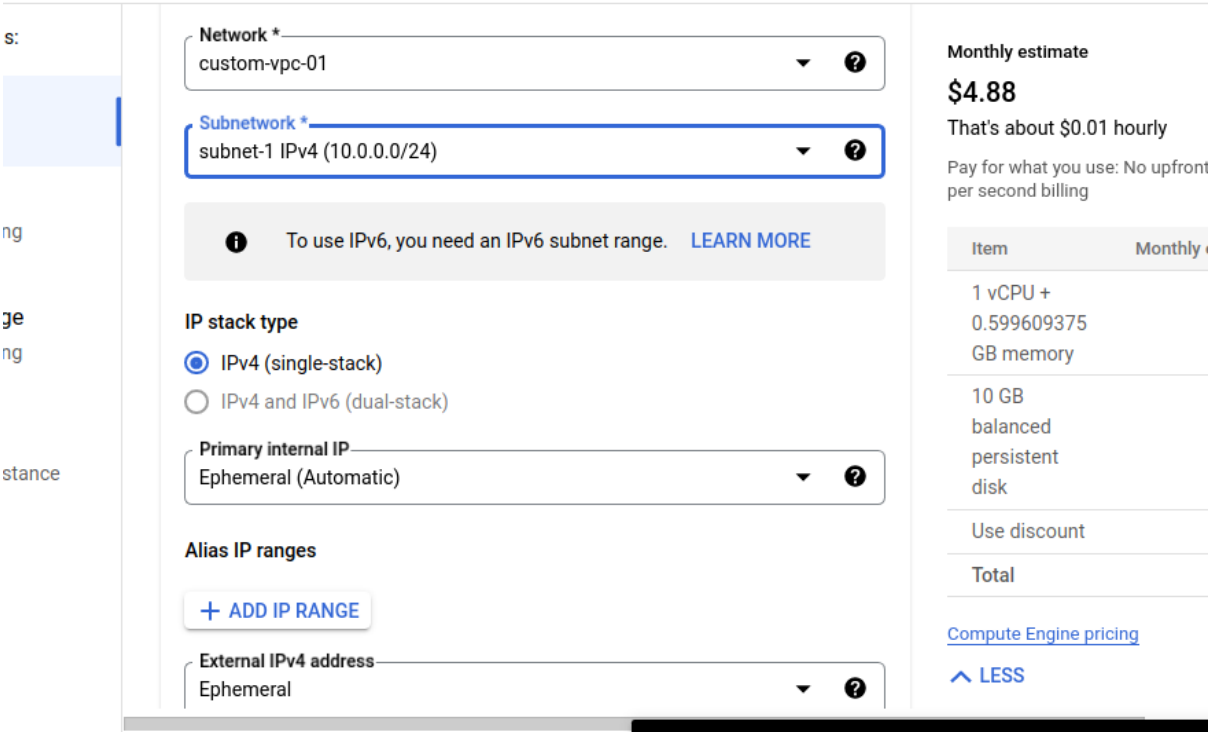


pull the image:

1. **create vm:**

attach the vm with service account:

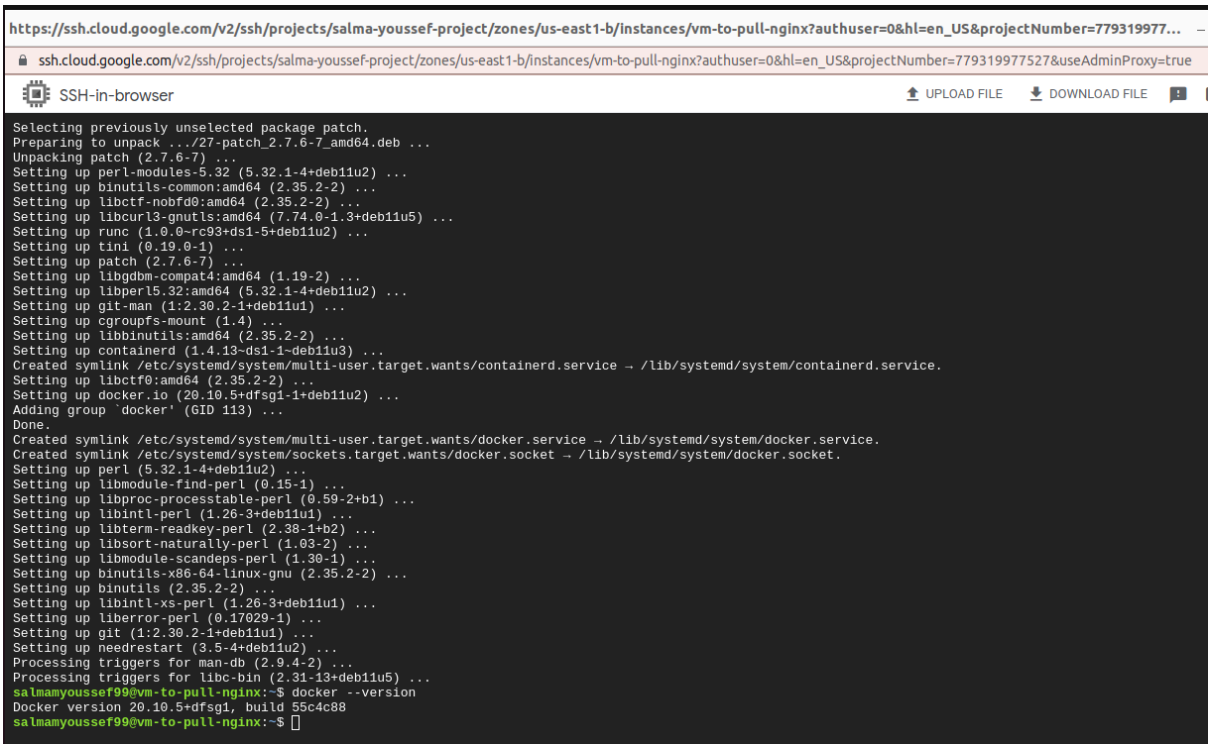




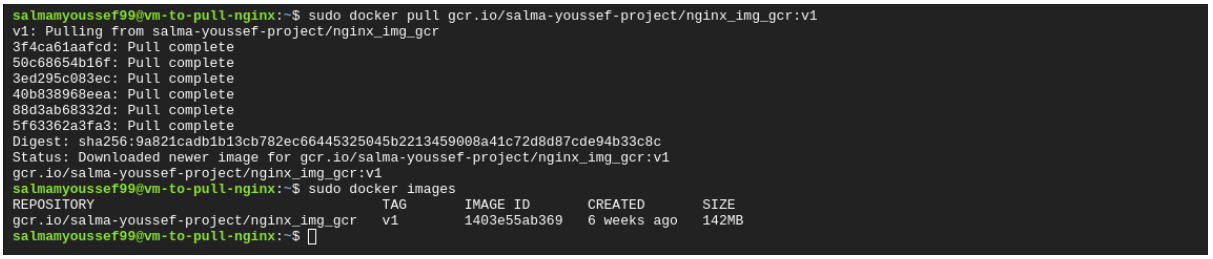
give the service account Storage Admin permission:

☐	my-first-serviceaccount@salma-youssef-project.iam.gserviceaccount.com	my-first-serviceaccount	Storage Admin

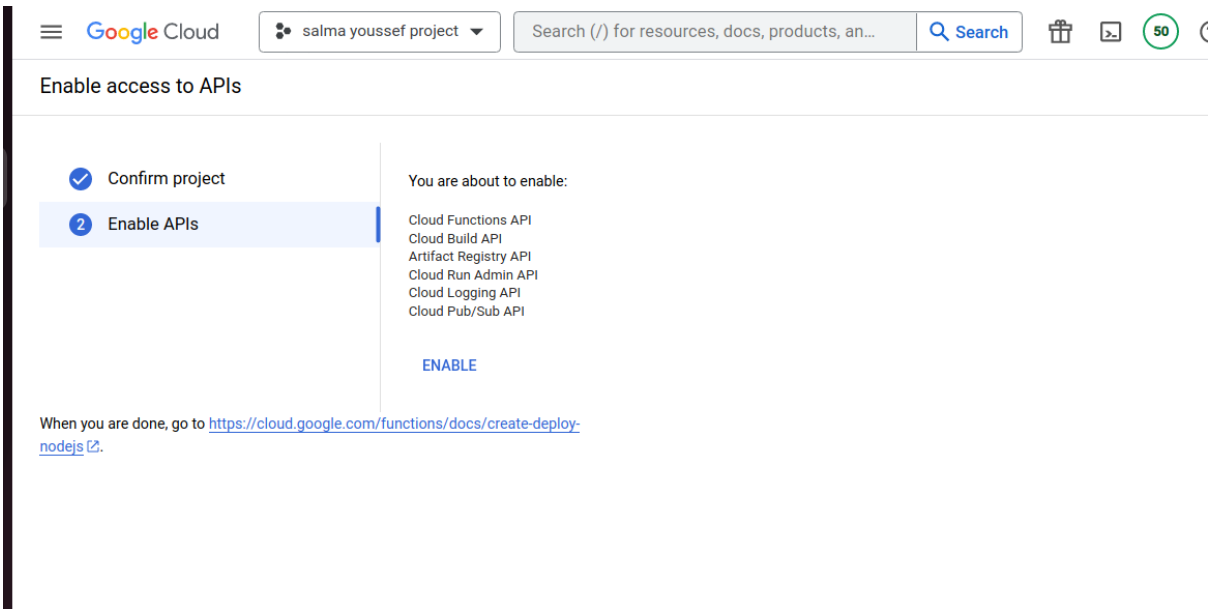
ssh to the vm and install docker:



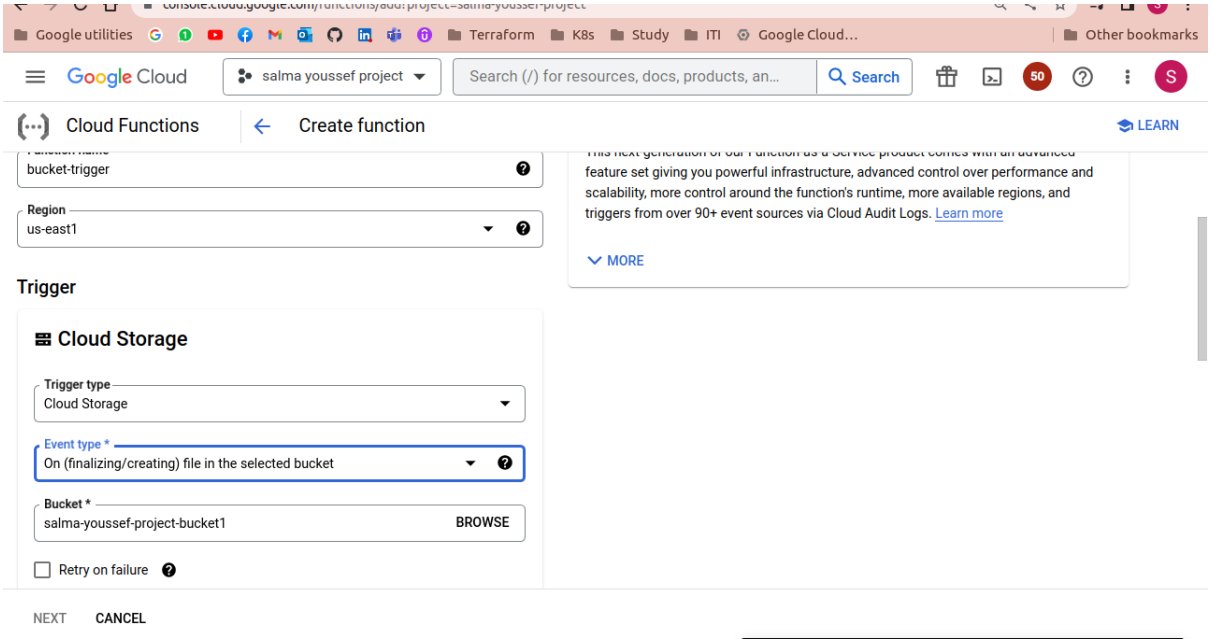
pulling the vm:

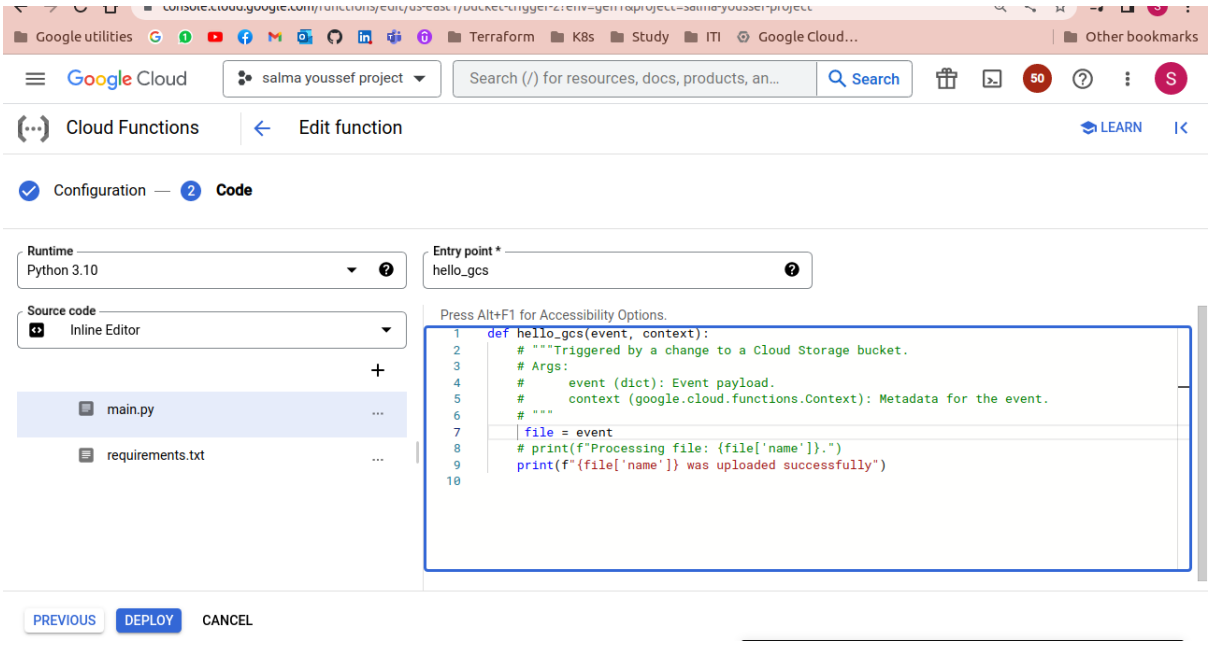


Q2:
enable APIs:

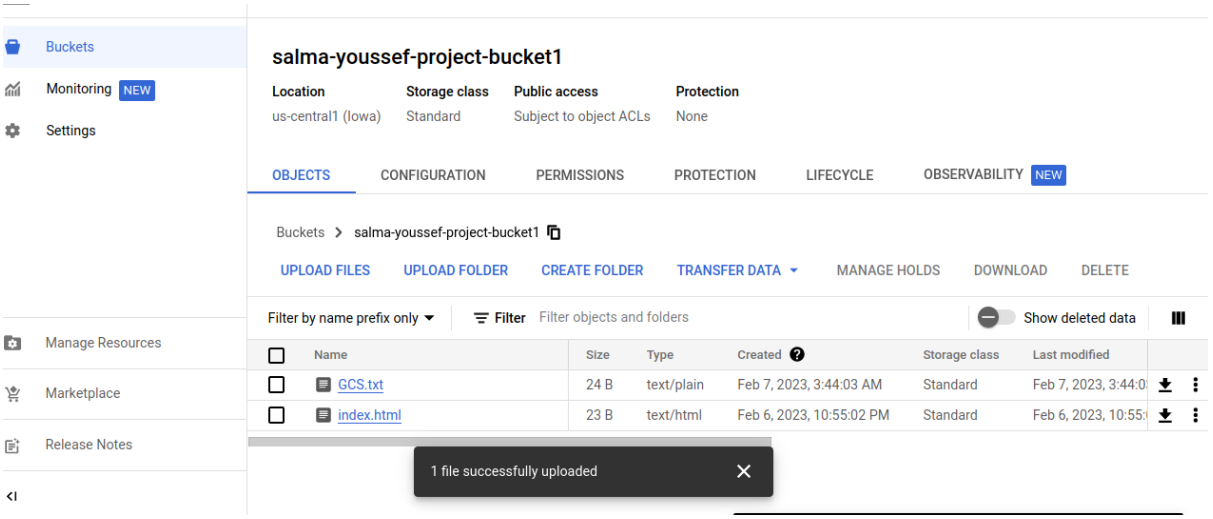


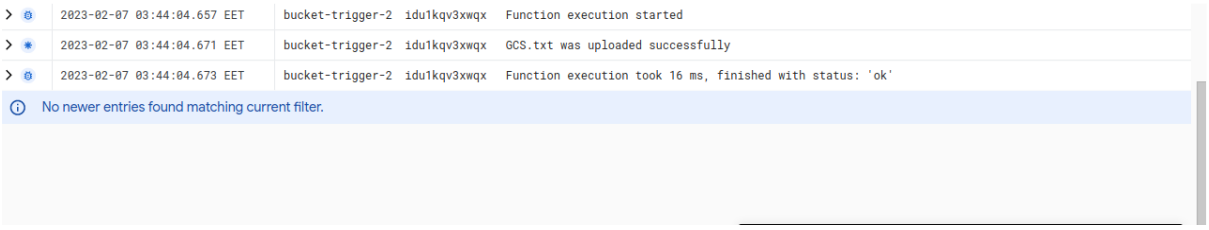
create the function:



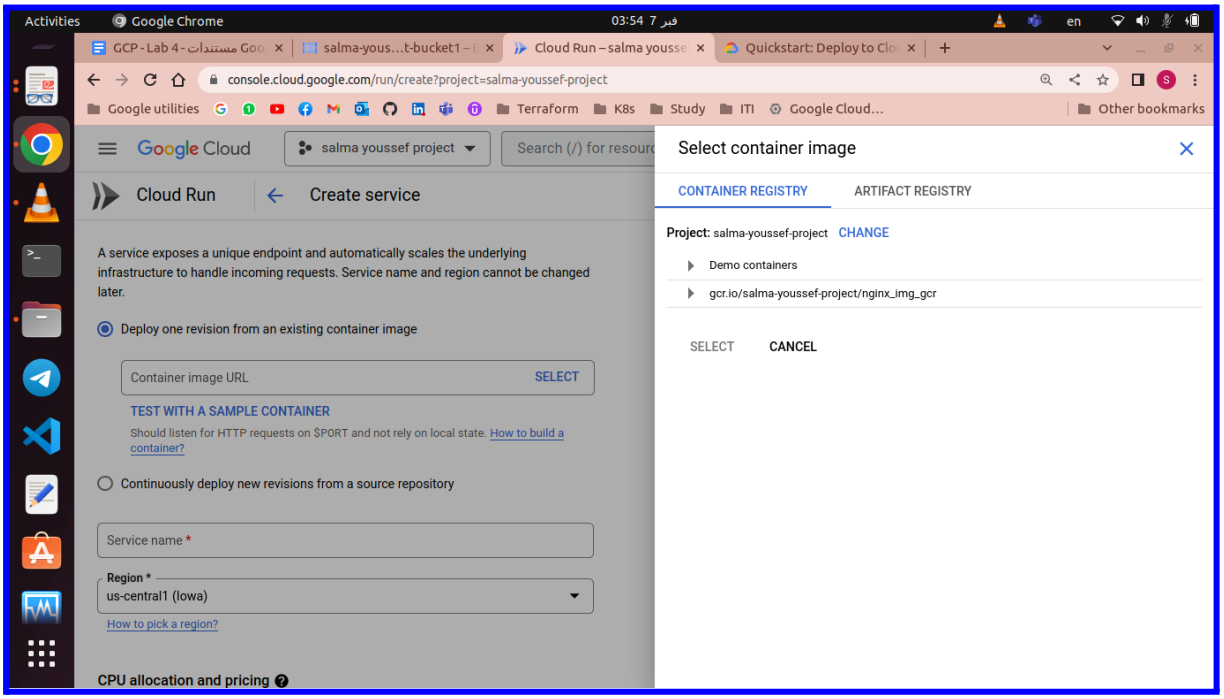


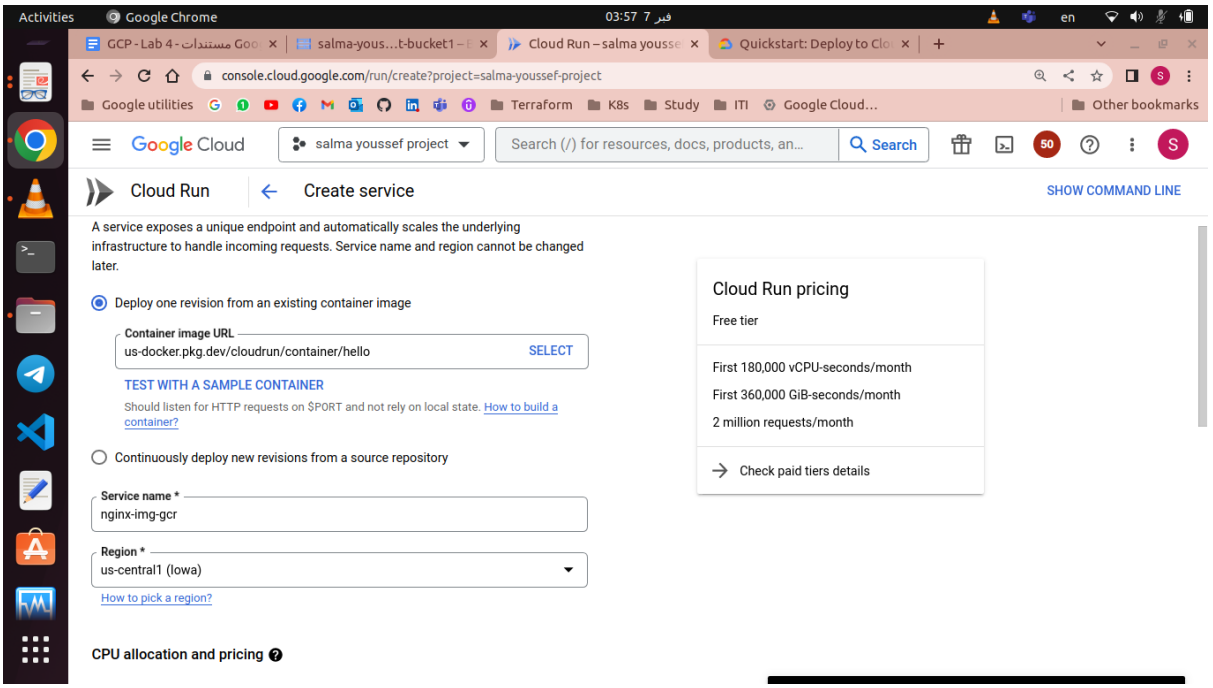
trigger the function by uploading GCS.txt file:

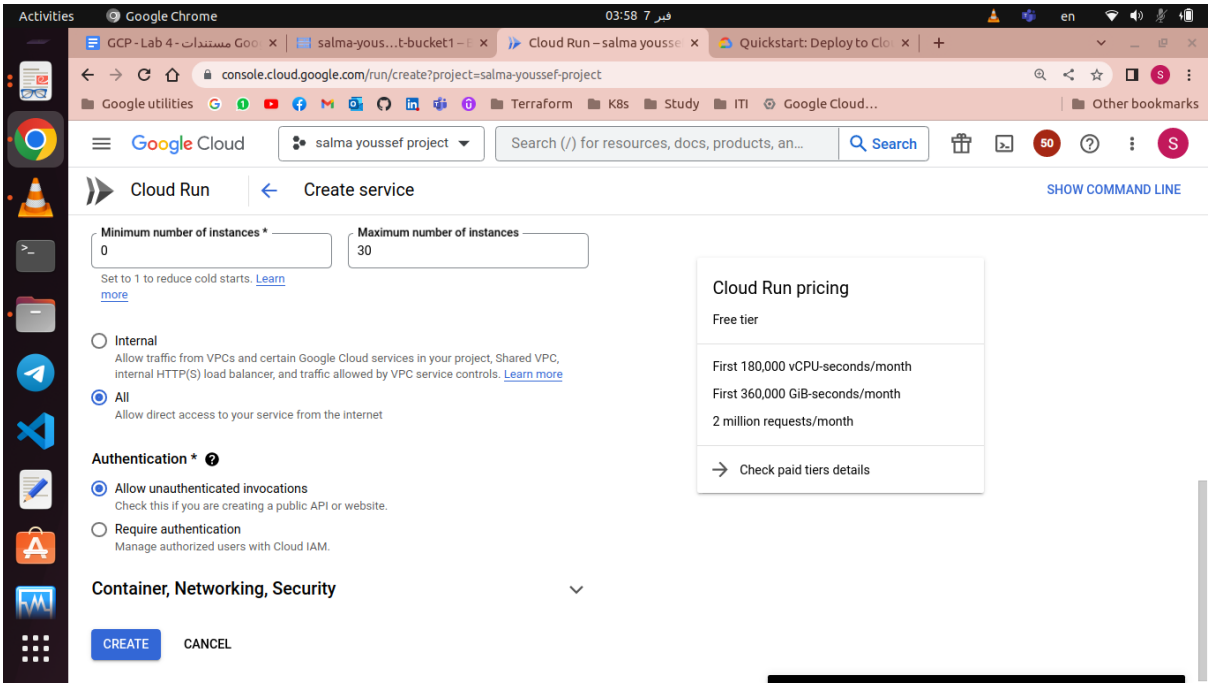


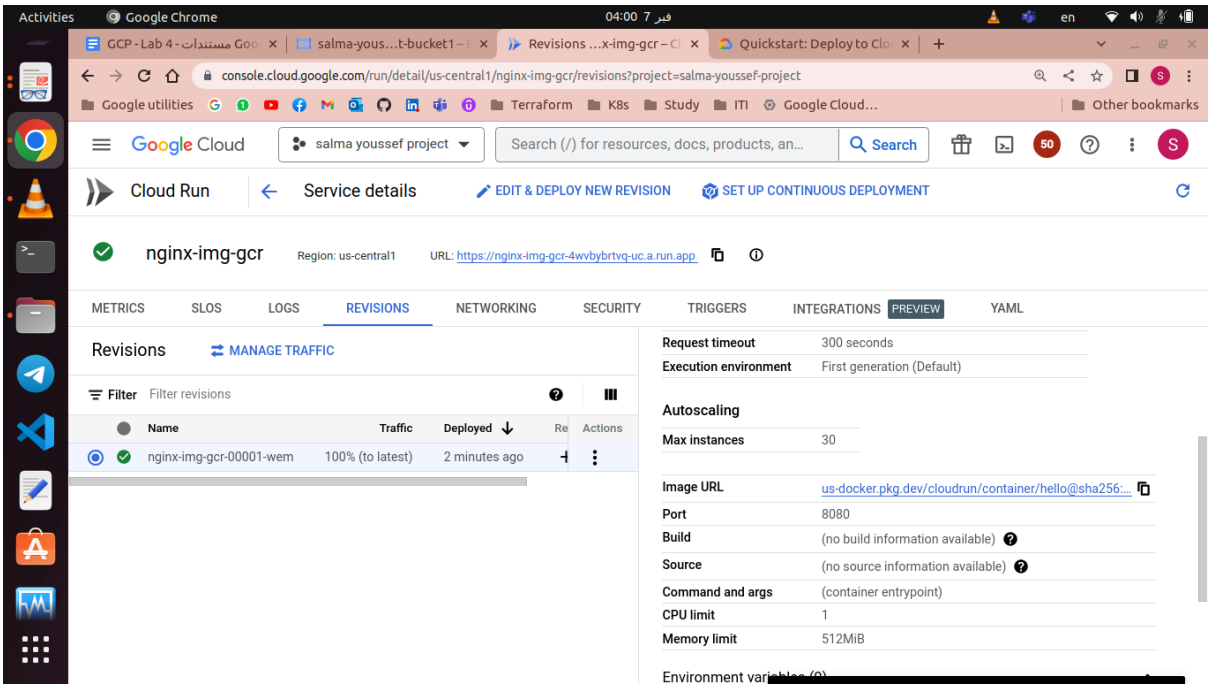


Q3:


Activities
Google Chrome
console.cloud.google.com/run/create?project=salma-youssef-project
Google Cloud
salma youssef project
Cloud Run
Create service
A service exposes a unique endpoint and automatically scales the underlying infrastructure to handle incoming requests. Service name and region cannot be changed later.
Deploy one revision from an existing container image
Container image URL
SELECT
TEST WITH A SAMPLE CONTAINER
Should listen for HTTP requests on $PORT and not rely on local state. How to build a container?
Continuously deploy new revisions from a source repository
Service name *
Region *
us-central1 (Iowa)
How to pick a region?
CPU allocation and pricing
Select container image
CONTAINER REGISTRY
ARTIFACT REGISTRY
Project: salma-youssef-project CHANGE
Demo containers
gcr.io/salma-youssef-project/nginx_img_gcr
SELECT
CANCEL


Activities
Google Chrome
console.cloud.google.com/run/create?project=salma-youssef-project
Google Cloud
salma youssef project
Search (/) for resources, docs, products, an...
Search
Cloud Run
Create service
SHOW COMMAND LINE
A service exposes a unique endpoint and automatically scales the underlying infrastructure to handle incoming requests. Service name and region cannot be changed later.
Deploy one revision from an existing container image
Container image URL
us-docker.pkg.dev/cloudrun/container/hello
SELECT
TEST WITH A SAMPLE CONTAINER
Should listen for HTTP requests on $PORT and not rely on local state. How to build a container?
Continuously deploy new revisions from a source repository
Service name *
nginx-img-gcr
Region *
us-central1 (Iowa)
How to pick a region?
CPU allocation and pricing
Cloud Run pricing
Free tier
First 180,000 vCPU-seconds/month
First 360,000 GiB-seconds/month
2 million requests/month
Check paid tiers details



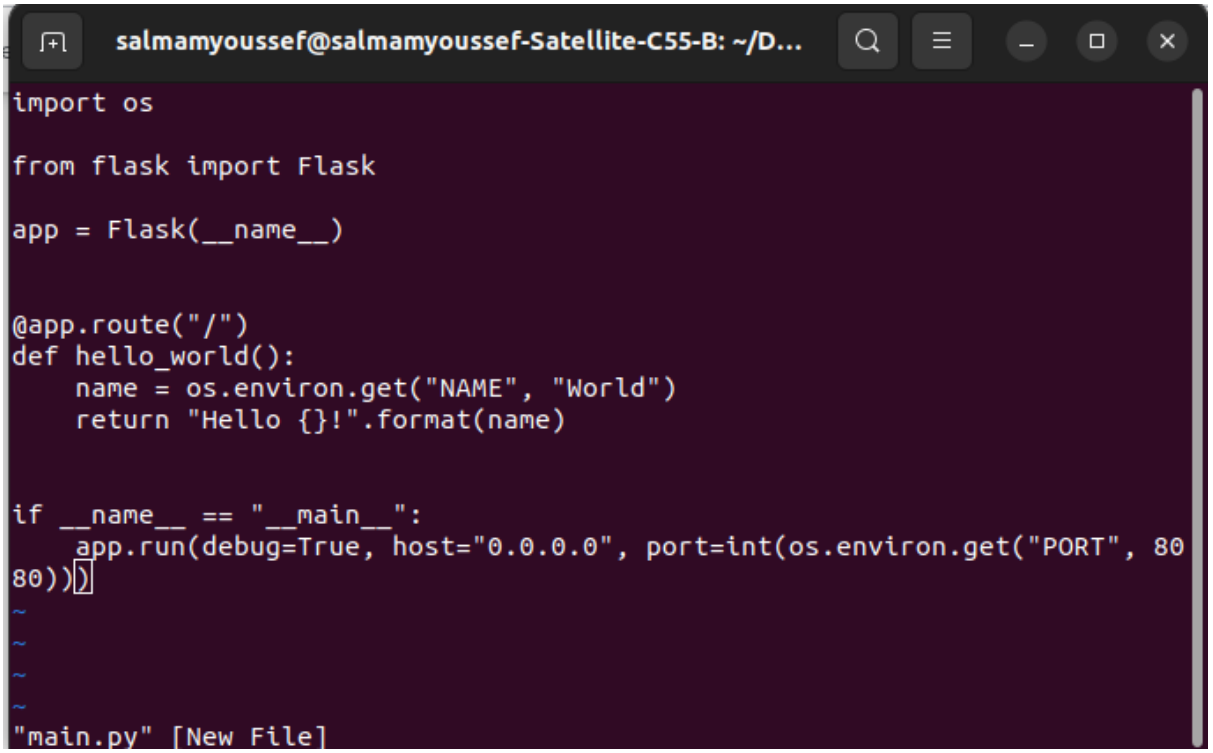


build any simple app:

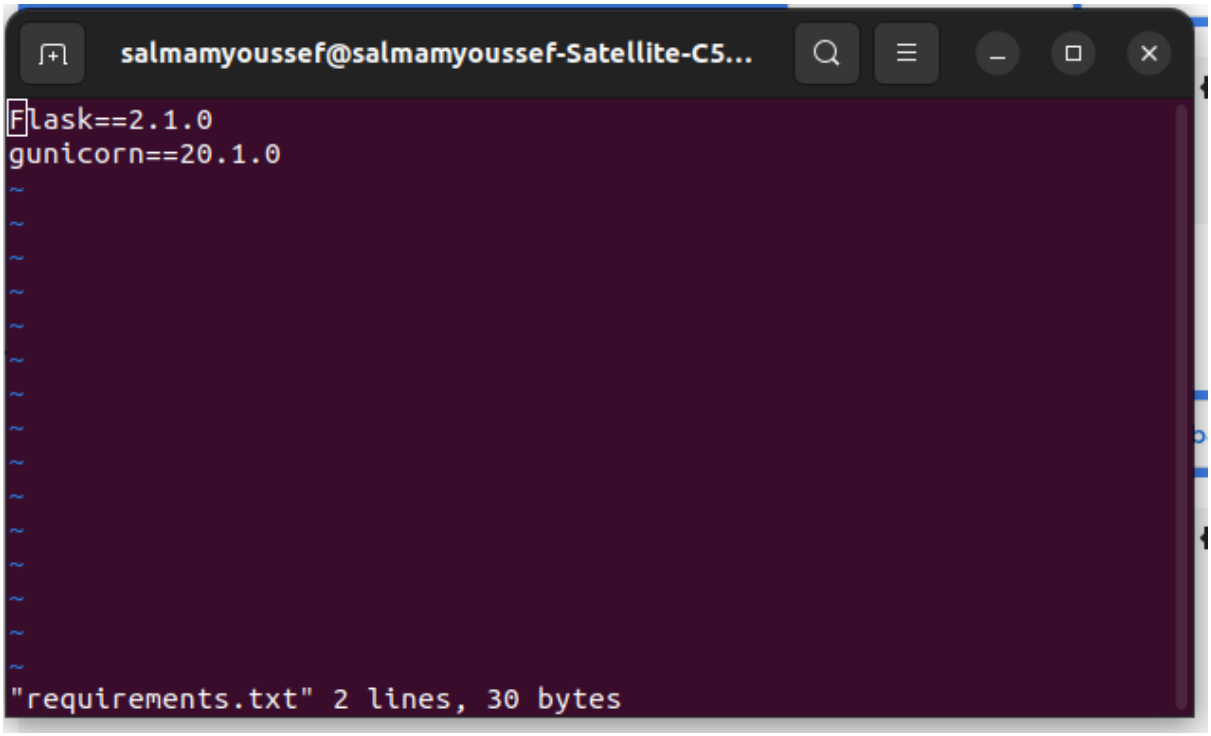
make helloworld directory and cd to it:

```
salmamyoussef@salmamyoussef-Satellite-C55-B: ~/Documents/ITI-devops/GCP/helloworld
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ gcloud config set project salma-youssef-project
WARNING: You do not appear to have access to project [salma-youssef-project] or it does not exist.
Are you sure you wish to set property [core/project] to salma-youssef-project?

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

Updated property [core/project].
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ mkdir ~/Documents/ITI-devops/GCP/helloworld
salmamyoussef@salmamyoussef-Satellite-C55-B:~$ cd ~/Documents/ITI-devops/GCP/helloworld
salmamyoussef@salmamyoussef-Satellite-C55-B:~/Documents/ITI-devops/GCP/helloworld$ vim main.py
Command 'vim' not found, but can be installed with:
sudo apt install vim         # version 2:8.2.3995-1ubuntu2.3, or
sudo apt install vim-tiny    # version 2:8.2.3995-1ubuntu2.3
sudo apt install vim-athena  # version 2:8.2.3995-1ubuntu2.3
sudo apt install vim-gtk3    # version 2:8.2.3995-1ubuntu2.3
sudo apt install vim-nox     # version 2:8.2.3995-1ubuntu2.3
salmamyoussef@salmamyoussef-Satellite-C55-B:~/Documents/ITI-devops/GCP/helsalmamyoussef@salmamyoussef-Satellite-C55-B:~/Documents/ITI-devops/G
CP/helloworl
d$ vi main.py
salmamyoussef@salmamyoussef-Satellite-C55-B:~/Documents/ITI-devops/GCP/helloworld$
```

create main.py file:



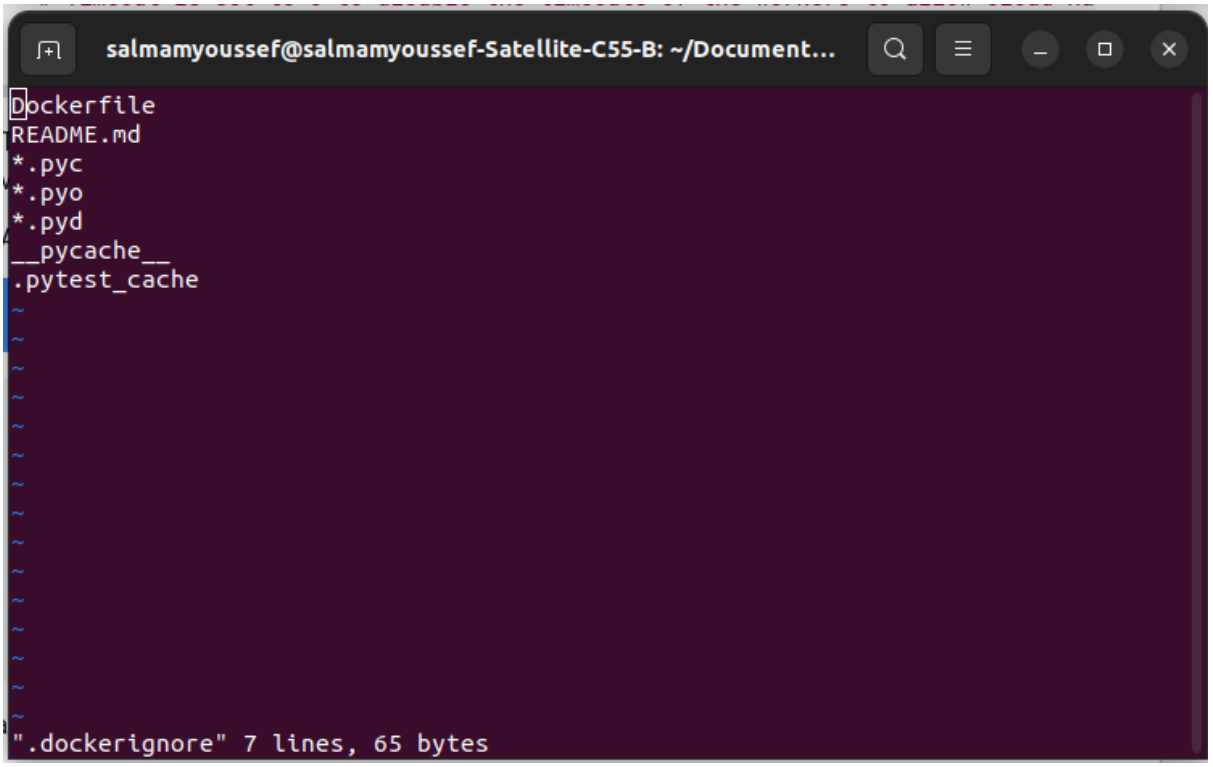
create requirements.txt file:



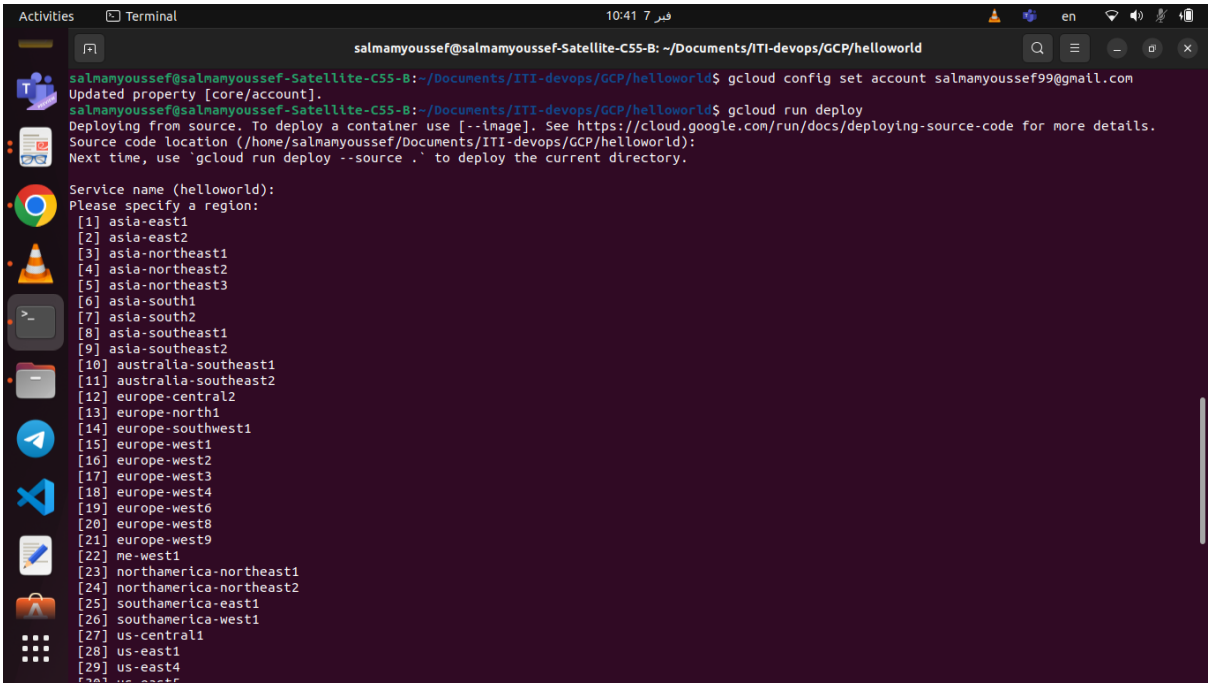
create Dockerfile:

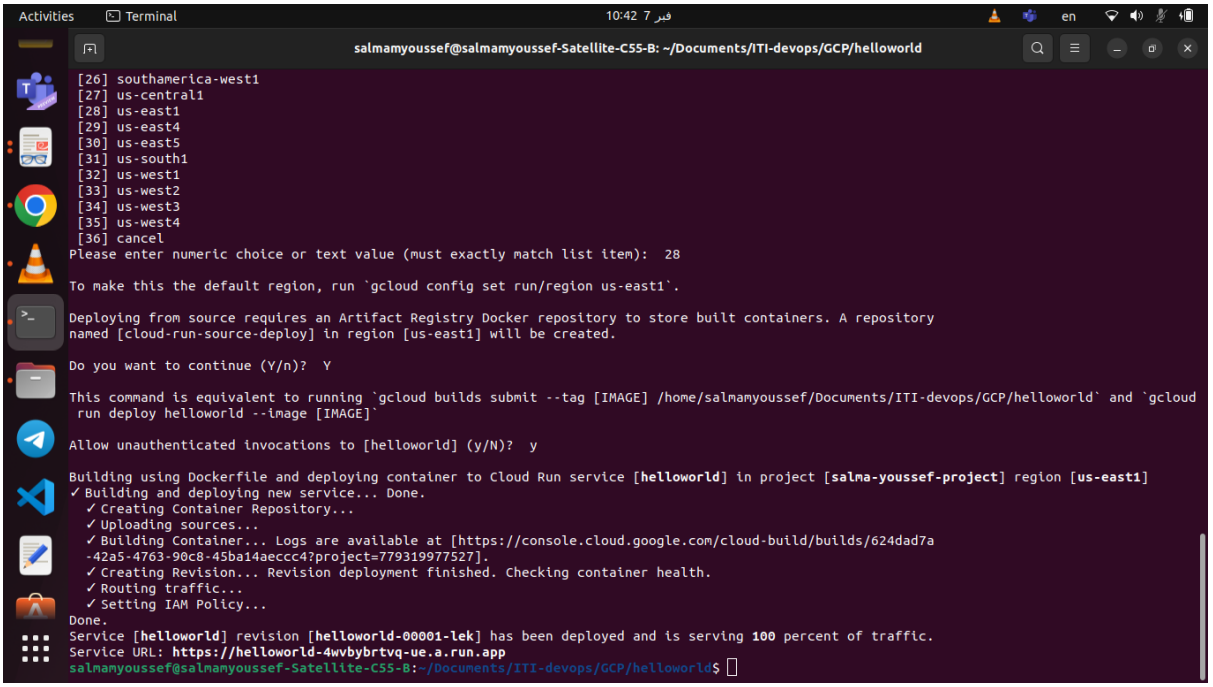
```
# Use the official lightweight Python image.
# https://hub.docker.com/_/python
FROM python:3.10-slim

# Allow statements and log messages to immediately appear in the Knative logs
ENV PYTHONUNBUFFERED True

# Copy local code to the container image.
ENV APP_HOME /app
WORKDIR $APP_HOME
COPY . ./

# Install production dependencies.
RUN pip install --no-cache-dir -r requirements.txt

# Run the web service on container startup. Here we use the gunicorn
# webserver, with one worker process and 8 threads.
# For environments with multiple CPU cores, increase the number of workers
# to be equal to the cores available.
# Timeout is set to 0 to disable the timeouts of the workers to allow Cloud Run to handle instance scaling.
CMD exec gunicorn --bind :$PORT --workers 1 --threads 8 --timeout 0 main:app
```

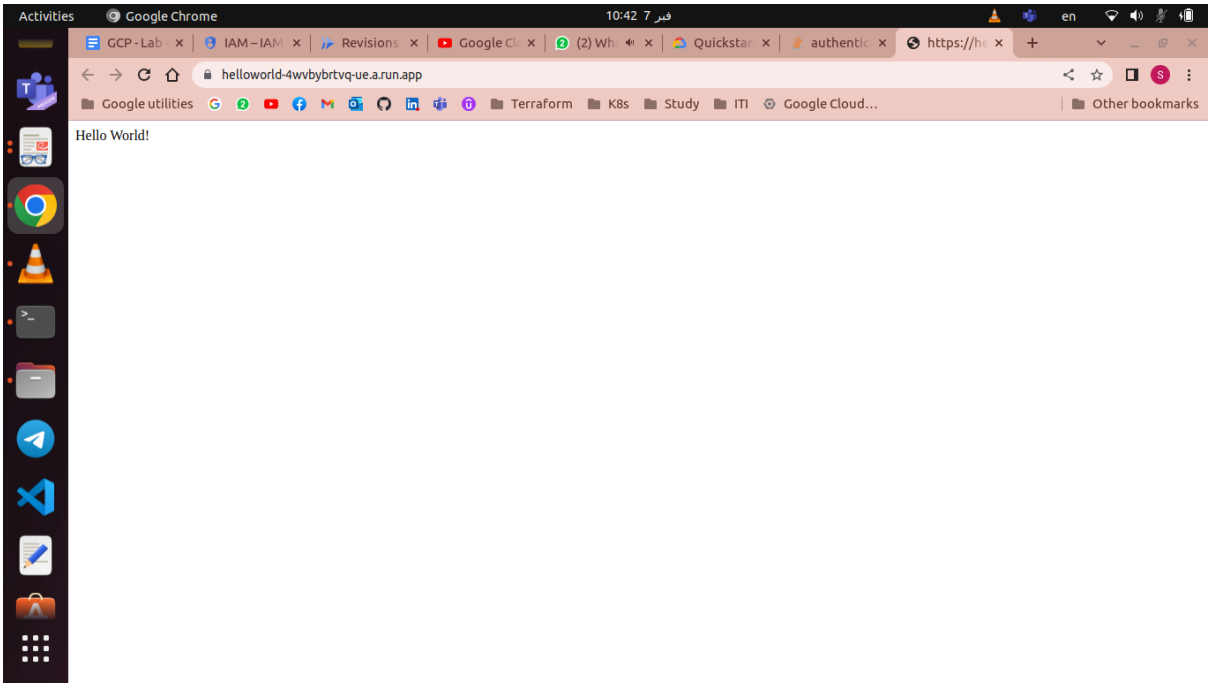
add .dockerignore file:


salmamyoussef@salmamyoussef-Satellite-C55-B: ~/Document...
Dockerfile
README.md
*.pyc
*.pyo
*.pyd
__pycache__
.pytest_cache
".dockerignore" 7 lines, 65 bytes

deploy:

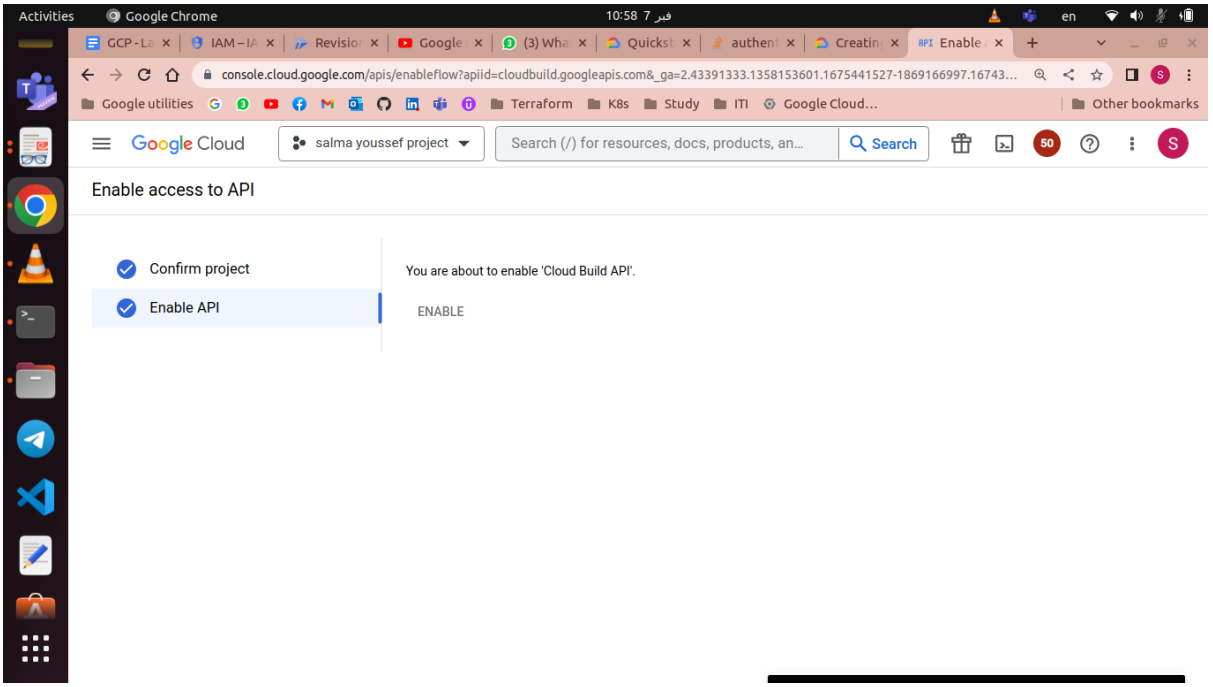

Activities
Terminal
10:41 7 فبر
en
salmamyoussef@salmamyoussef-Satellite-C55-B: ~/Documents/ITI-devops/GCP/helloworld
salmamyoussef@salmamyoussef-Satellite-C55-B:~/Documents/ITI-devops/GCP/helloworld$ gcloud config set account salmamyoussef99@gmail.com
Updated property [core/account].
salmamyoussef@salmamyoussef-Satellite-C55-B:~/Documents/ITI-devops/GCP/helloworld$ gcloud run deploy
Deploying from source. To deploy a container use [--image]. See https://cloud.google.com/run/docs/deploying-source-code for more details.
Source code location (/home/salmamyoussef/Documents/ITI-devops/GCP/helloworld):
Next time, use `gcloud run deploy --source .` to deploy the current directory.
Service name (helloworld):
Please specify a region:
[1] asia-east1
[2] asia-east2
[3] asia-northeast1
[4] asia-northeast2
[5] asia-northeast3
[6] asia-south1
[7] asia-south2
[8] asia-southeast1
[9] asia-southeast2
[10] australia-southeast1
[11] australia-southeast2
[12] europe-central2
[13] europe-north1
[14] europe-southwest1
[15] europe-west1
[16] europe-west2
[17] europe-west3
[18] europe-west4
[19] europe-west6
[20] europe-west8
[21] europe-west9
[22] me-west1
[23] northamerica-northeast1
[24] northamerica-northeast2
[25] southamerica-east1
[26] southamerica-west1
[27] us-central1
[28] us-east1
[29] us-east4



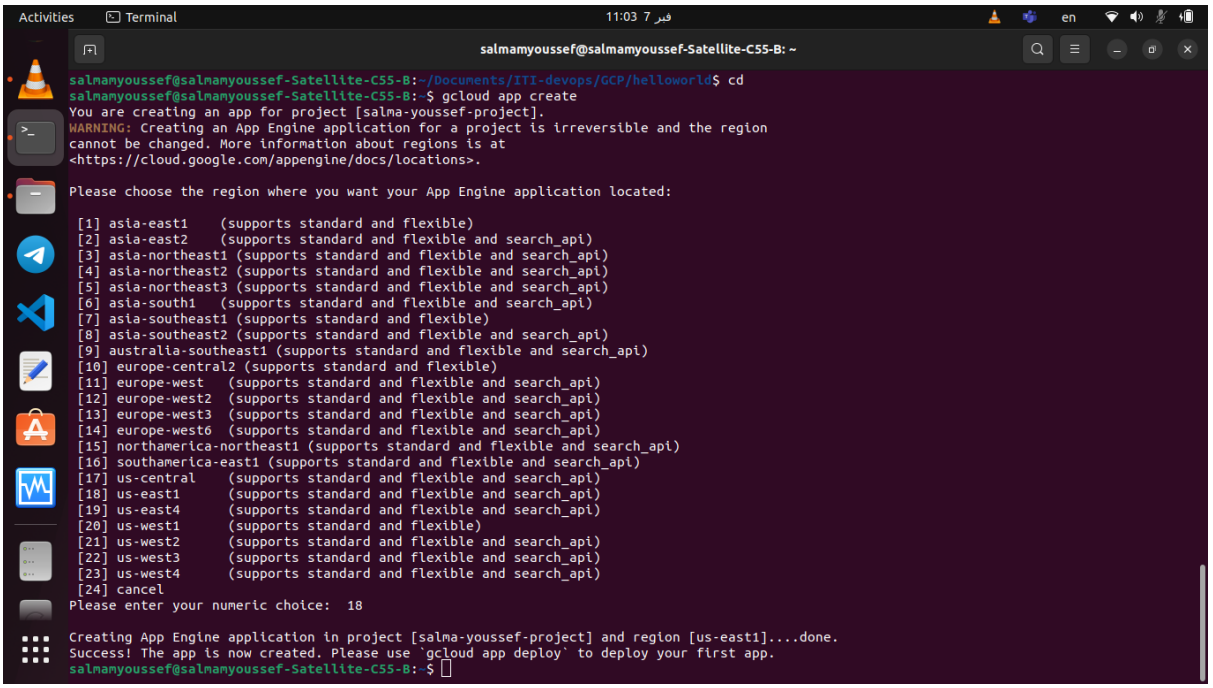


Q4:

1. enable Cloud Engine API:



2. enable App Engine and create the associated application resources:

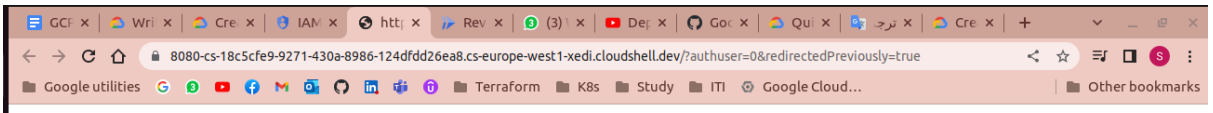


the project:

```
salmamyoussef99@cloudshell:~ (salma-youssef-project)$ git clone https://github.com/GoogleCloudPlatform/python-docs-samples.git
Cloning into 'python-docs-samples'...
remote: Enumerating objects: 91533, done.
remote: Counting objects: 100% (401/401), done.
remote: Compressing objects: 100% (191/191), done.
remote: Total 91533 (delta 264), reused 262 (delta 210), pack-reused 91132
Receiving objects: 100% (91533/91533), 196.47 MiB | 9.77 MiB/s, done.
Resolving deltas: 100% (54093/54093), done.
Updating files: 100% (3898/3898), done.
```

```
salmamyoussef99@cloudshell:~/python-docs-samples (salma-youssef-project)$ ls
appengine           codelabs                datastore                iap                monitoring            retail            testing
asset               CODE_OF_CONDUCT.md      dialogflow               iot                notebooks             run               texttospeech
auth                composer                dlp                      jobs               noxfile_config.py     scheduler         trace
AUTHORING_GUIDE.md  compute                 dns                      kms                noxfile-template.py   scripts           translate
automl              contact-center-insights documentai               kubernetes_engine  opencensus            secretmanager     video
batch               container               endpoints                language           optimization          securitycenter    vision
bigquery            containeranalysis       enterpriseknowledgegraph LICENSE            people-and-planet-ai  SECURITY.md       webrisk
bigquery_storage    contentwarehouse        error_reporting          logging            privateca             servicedirectory  workflows
billing             CONTRIBUTING.md         eventarc                 MAC_SETUP.md       profiler              spanner
blog                datacatalog             favicon.ico              media              pubsub                speech
cdn                 dataflow                firestore                media_cdn          pubsublite            storage
cloudbuild          datalabeling            functions                media-translation  pytest.ini            storagetransfer
cloud-sql           dataproc                healthcare               memorystore        README.md             tables
cloud_tasks         data-science-onramp     iam                      ml_engine          renovate.json         talent
```

```
salmamyoussef99@cloudshell:~/python-docs-samples (salma-youssef-project)$ cd appengine
salmamyoussef99@cloudshell:~/python-docs-samples/appengine (salma-youssef-project)$ ls
flexible  standard  standard_python3
salmamyoussef99@cloudshell:~/python-docs-samples/appengine (salma-youssef-project)$ cd standard_python3
salmamyoussef99@cloudshell:~/python-docs-samples/appengine/standard_python3 (salma-youssef-project)$ ls
bigquery         bundled-services  cloudsql       django       migration  redis    warmup
building-an-app  cloud_debugger    custom-server  hello_world  pubsub     spanner
salmamyoussef99@cloudshell:~/python-docs-samples/appengine/standard_python3 (salma-youssef-project)$ cd hello_world
salmamyoussef99@cloudshell:~/python-docs-samples/appengine/standard_python3/hello_world (salma-youssef-project)$ ls
app.yaml  main.py  main_test.py  requirements-test.txt  requirements.txt
salmamyoussef99@cloudshell:~/python-docs-samples/appengine/standard_python3/hello_world (salma-youssef-project)$ python3 main.py
 * Serving Flask app 'main'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:8080
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 492-557-666
127.0.0.1 - - [07/Feb/2023 09:26:41] "GET /?authuser=0&redirectedPreviously=true HTTP/1.1" 200 -
127.0.0.1 - - [07/Feb/2023 09:26:41] "GET /favicon.ico HTTP/1.1" 404 -
```



Hello World!