

# Lab 4.1

Q1:

Q1/1 - creating 3 buckets:

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

salma youssef project	Search (/) for resources, docs, products, an...	Search	📁	📄	50	?	⋮	S
Buckets		CREATE	REFRESH	HELP ASSISTANT		LEARN		
Filter		Filter buckets						
<input type="checkbox"/>	Name ↑	Created	Location type	Location	Default storage class			
<input type="checkbox"/>	<a href="#">salma-youssef-project-bucket1</a>	Feb 6, 2023, 9:55:48 PM	Region	us-central1	Regional	⋮		
<input type="checkbox"/>	<a href="#">salma-youssef-project-bucket2</a>	Feb 6, 2023, 9:56:53 PM	Region	us-central1	Regional	⋮		
<input type="checkbox"/>	<a href="#">salma-youssef-project-bucket3</a>	Feb 6, 2023, 9:56:58 PM	Region	us-central1	Regional	⋮		


Q1/2 - enable the versioning for them:

```

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






```

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

```


salma youssef project

Search



50




←
Bucket details
REFRESH
HELP ASSISTANT
LEARN

salma-youssef-project-bucket1

Location	Storage class	Public access	Protection
us-central1 (Iowa)	Regional	Subject to object ACLs	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

<input type="checkbox"/>	Name	Size	Type	Created	Storage class	Last modified	
<input type="checkbox"/>	 <a href="#">GCS.txt</a>	24 B	text/plain	Feb 6, 2023, 10:10:47 PM	Regional	Feb 6, 2023, 10:10:47 PM	 

## copying the file into both bucket2 and bucket3:

```
salmanyoussef@salmanyoussef-Satellite-C55-B:~$ gsutil cp gs://salma-youssef-project-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.

salmanyoussef@salmanyoussef-Satellite-C55-B:~$ gsutil cp gs://salma-youssef-project-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.

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

salma youssef project

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

Search

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S

← Bucket details

REFRESH

HELP ASSISTANT

LEARN

salma-youssef-project-bucket2

Location

us-central1 (Iowa)

Storage class

Regional

Public access

Subject to object ACLs

Protection

Object versioning

OBJECTS

CONFIGURATIONPERMISSIONSPROTECTIONLIFECYCLEOBSERVABILITYNEW

Buckets > salma-youssef-project-bucket2

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

<input type="checkbox"/>	Name	Size	Type	Created	Storage class	Last modified	
<input type="checkbox"/>	<a href="#">GCS.txt</a>	24 B	text/plain	Feb 6, 2023, 10:14:30 PM	Regional	Feb 6, 2023, 10:14:30 PM	

salma youssef project

Search (/) for resources, docs, products, an...

Search

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?

S

← Bucket details

REFRESH

HELP ASSISTANT

LEARN

salma-youssef-project-bucket3

Location

Storage class

Public access

Protection

us-central1 (Iowa)

Regional

Subject to object ACLs

Object versioning

OBJECTS

CONFIGURATION

PERMISSIONS

PROTECTION

LIFECYCLE

OBSERVABILITY

NEW

Buckets > salma-youssef-project-bucket3

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

<input type="checkbox"/>	Name	Size	Type	Created	Storage class	Last modified	
<input type="checkbox"/>	 <a href="#">GCS.txt</a>	24 B	text/plain	Feb 6, 2023, 10:14:38 PM	Regional	Feb 6, 2023, 10:14:38 PM	 

## Q1/4 - bucket1 file Deletion:

```

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

salmanyoussef@salmanyoussef-Satellite-C55-B:~$

```

salma youssef project

Search (/) for resources, docs, products, an...

Search

50

S

←

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

<input type="checkbox"/>	Name	Size	Type	Created	Storage class	Last modified	Public access	Version history	Encryption
No rows to display									

Q2:

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

salma youssef project

Search (/) for resources, docs, products, an...

Search

50

S

←

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

<input type="checkbox"/>	Name	Size	Type	Created	Storage class	Last modified	
<input type="checkbox"/>	<a href="#">index.html</a>	23 B	text/html	Feb 6, 2023, 10:55:02 PM	Standard	Feb 6, 2023, 10:55:02 PM	

Q3:

## create mysql instance on GCP:

Google Cloud

salma yousef project

mysql

Search

Create a MySQL instance

**Instance info**

Instance ID \*

private-mysql-instance

Use lowercase letters, numbers, and hyphens. Start with a letter.

Password \*

...

GENERATE

☐ No password

✓ PASSWORD POLICY

Database version \*

MySQL 8.0

✓ SHOW MINOR VERSIONS

**Choose a configuration to start with**

These suggested configurations will pre-fill this form as a starting point for creating an

**Summary**

Region	us-east1 (South Caroli
DB Version	MySQL 8.0
vCPUs	1 vCPU
Memory	3.75 GB
Storage	100 GB
Network throughput (MB/s) ?	250 of 2,000
Disk throughput (MB/s) ?	Read: 12.0 of 240.0 Write: 12.0 of 75.8
IOPS ?	Read: 75 of 3,000 Write: 150 of 15,000
Connections	Private IP
Backup	Automated
Availability	Single zone
Point-in-time recovery	Enabled

Create a MySQL instance

You can use the Cloud SQL Proxy for extra security with either option. [Learn more](#)

**Instance IP assignment**

☒ Private IP

Assigns an internal, Google-hosted VPC IP address. Requires additional APIs and permissions. Can't be disabled once enabled. [Learn more](#)

**Associated networking**

Select a network to create a private connection

Network \*

custom-vpc-01

✓

Private services access connection for network custom-vpc-01 has been successfully created. You will now be able to use the same network across all your project's managed services. If you would like to change this connection, please visit the [Networking page](#).

✓ SHOW ALLOCATED IP RANGE OPTION

☐ Public IP

Assigns an external, internet-accessible IP address. Requires using an authorized network

**Summary**

Region	us-east1 (South Caroli
DB Version	MySQL 8.0
vCPUs	1 vCPU
Memory	3.75 GB
Storage	100 GB
Network throughput (MB/s) ?	250 of 2,000
Disk throughput (MB/s) ?	Read: 12.0 of 240.0 Write: 12.0 of 75.8
IOPS ?	Read: 75 of 3,000 Write: 150 of 15,000
Connections	Private IP
Backup	Automated
Availability	Single zone
Point-in-time recovery	Enabled

## create a vm to access mysql instance:

salma youssef project

vm

Search

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S

EQUIVALENT CODE

HELP ASSISTANT

ie of the options:

from scratch

emplate

from an existing

nachine image

from an existing

n onto a VM instance

Name \*

vm-to-connect-mysql

Labels

+ ADD LABELS

Region \*

us-east1 (South Carolina)

Region is permanent

Zone \*

us-east1-b

Zone is permanent

Machine configuration

Machine family

GENERAL-PURPOSE

COMPUTE-OPTIMIZED

MEMORY-OPTIMIZED

GPU

Machine types for common workloads, optimized for cost and flexibility

Series

N1

Powered by Intel Skylake CPU platform or one of its predecessors

Monthly estimate

\$4.88

That's about \$0.01 hourly

Pay for what you use: No upfront cost per second billing

Item	Monthly estimate
1 vCPU + 0.599609375 GB memory	
10 GB balanced persistent disk	
Use discount	
Total	

Uploads and salma youssef project operations

Creating private-mysql-instance 1 min 18 sec

salma youssef project

vm

Search

50

S

EQUIVALENT CODE

HELP ASSISTANT

ie of the options:

from scratch

emplate

from an existing

nachine image

from an existing

n onto a VM instance

Network \*

custom-vpc-01

Subnetwork \*

subnet-1 IPv4 (10.0.0.0/24)

To use IPv6, you need an IPv6 subnet range. [LEARN MORE](#)

IP stack type

☒ IPv4 (single-stack)
 ☐ IPv4 and IPv6 (dual-stack)

Primary internal IP

Ephemeral (Automatic)

Alias IP ranges

+ ADD IP RANGE

External IPv4 address

Ephemeral

Monthly estimate

\$4.88

That's about \$0.01 hourly

Pay for what you use: No upfront cost per second billing

Item	Monthly estimate
1 vCPU + 0.599609375 GB memory	
10 GB balanced persistent disk	
Use discount	
Total	

Uploads and salma youssef project operations

Creating private-mysql-instance 1 min 39 sec

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:

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 a new database:



https://ssh.cloud.google.com/v2/ssh/projects/salma-youssef-project/zones/us-east1-b/instances/vm-to-conne... - □ x

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)]> 
```

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:

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

push the image:

```
salmanyoussef@salmanyoussef-Satellite-C55-B:~$ sudo docker push gcr.io/salma-youssef-project/nginx_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
salmanyoussef@salmanyoussef-Satellite-C55-B:~$
```


the image:

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

salma youssef project

Filter

Enter property name or value

Name ↑	Hostname ?	Visibility ?
 <a href="#">nginx_img_gcr</a>	gcr.io	Private

Push (upload) and pull (download)

[Configuring access control](#)

Control access to Container Registry

[Authentication methods](#) [?](#)

Configure the Docker client to work with Container Registry.

[Managing images](#) [?](#)

Manage images in Container Registry, including listing, tagging, and deleting.

pull the image:

1. create vm:

ns:

1

iting

age

iting

Name \*  
vm-to-pull-nginx ?

Labels ?  
[+ ADD LABELS](#)

Region \*  
us-east1 (South Carolina) ?  
Region is permanent

Zone \*  
us-east1-b ?  
Zone is permanent

Machine configuration

Monthly estimate

\$4.88

That's about \$0.01 hourly

Pay for what you use: No upfront per second billing

Item	Monthly
1 vCPU + 0.599609375 GB memory	
10 GB balanced	

## attach the vm with service account:

ng

ge

ng

stance

[CHANGE](#)

Identity and API access ?

Service accounts ?  
Service account  
my-first-serviceaccount  
Requires the Service Account User role (roles/iam.serviceAccountUser) to be set for users who want to access VMs with this service account. [Learn more](#)

Access scopes ?  
Use IAM roles with service accounts to control VM access. [Learn more](#)

\$4.88

That's about \$0.01 hourly

Pay for what you use: No upfront c per second billing

Item	Monthly es
1 vCPU + 0.599609375 GB memory	
10 GB balanced persistent disk	

s:

ng

ge

ng

stance

Network \*  
custom-vpc-01 ?

Subnetwork \*  
subnet-1 IPv4 (10.0.0.0/24) ?

?

To use IPv6, you need an IPv6 subnet range. [LEARN MORE](#)

IP stack type  
☒ IPv4 (single-stack)  
☐ IPv4 and IPv6 (dual-stack)

Primary internal IP  
Ephemeral (Automatic) ?

Alias IP ranges  
[+ ADD IP RANGE](#)

External IPv4 address  
Ephemeral ?

Monthly estimate

\$4.88

That's about \$0.01 hourly

Pay for what you use: No upfront per second billing

Item	Monthly
1 vCPU + 0.599609375 GB memory	
10 GB balanced persistent disk	
Use discount	
Total	

[Compute Engine pricing](#)  
[^ LESS](#)

# 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:

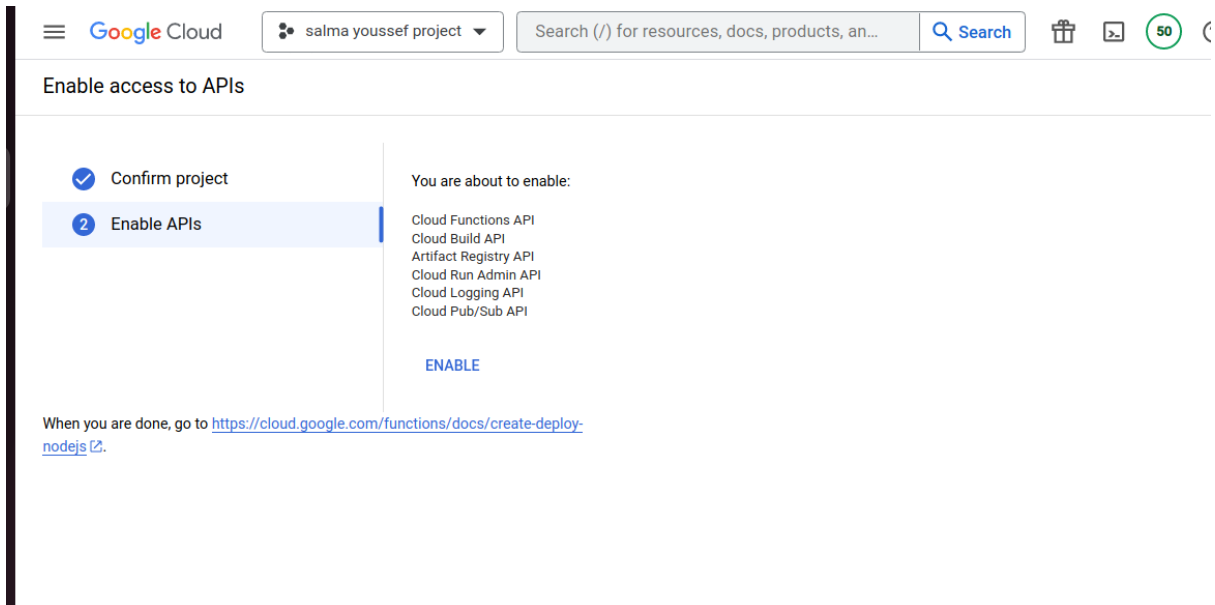
```
https://ssh.cloud.google.com/v2/ssh/projects/salma-youssef-project/zones/us-east1-b/instances/vm-to-pull-nginx?authuser=0&hl=en_US&projectNumber=779319977... -
ssh.cloud.google.com/v2/ssh/projects/salma-youssef-project/zones/us-east1-b/instances/vm-to-pull-nginx?authuser=0&hl=en_US&projectNumber=779319977527&useAdminProxy=true
SSH-in-browser
UPLOAD FILE
DOWNLOAD FILE

Selecting previously unselected package patch.
Preparing to unpack .../27-patch_2.7.6-7_amd64.deb ...
Unpacking patch (2.7.6-7) ...
Setting up perl-modules-5.32 (5.32.1-4+deb11u2) ...
Setting up binutils-common:amd64 (2.35.2-2) ...
Setting up libctf-nobfd0:amd64 (2.35.2-2) ...
Setting up libcurl3-gnutls:amd64 (7.74.0-1.3+deb11u5) ...
Setting up runc (1.0.0-rc93+ds1-5+deb11u2) ...
Setting up tini (0.19.0-1) ...
Setting up patch (2.7.6-7) ...
Setting up libgdbm-compat4:amd64 (1.19-2) ...
Setting up libperl5.32:amd64 (5.32.1-4+deb11u2) ...
Setting up git-man (1:2.30.2-1+deb11u1) ...
Setting up cgroupfs-mount (1.4) ...
Setting up libbinutils:amd64 (2.35.2-2) ...
Setting up containerd (1.4.13-ds1-1-deb11u3) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.
Setting up libctf0:amd64 (2.35.2-2) ...
Setting up docker.io (20.10.5+dfsg1-1+deb11u2) ...
Adding group `docker' (GID 113) ...
Done.
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Setting up perl (5.32.1-4+deb11u2) ...
Setting up libmodule-find-perl (0.15-1) ...
Setting up libproc-processtable-perl (0.59-2+b1) ...
Setting up libintl-perl (1.26-3+deb11u1) ...
Setting up libterm-readkey-perl (2.38-1+b2) ...
Setting up libsort-naturally-perl (1.03-2) ...
Setting up libmodule-scandeps-perl (1.30-1) ...
Setting up binutils-x86-64-linux-gnu (2.35.2-2) ...
Setting up binutils (2.35.2-2) ...
Setting up libintl-xs-perl (1.26-3+deb11u1) ...
Setting up liberror-perl (0.17029-1) ...
Setting up git (1:2.30.2-1+deb11u1) ...
Setting up needrestart (3.5-4+deb11u2) ...
Processing triggers for man-db (2.9.4-2) ...
Processing triggers for libc-bin (2.31-13+deb11u5) ...
sa1mamayoussef99@vm-to-pull-nginx:~$ docker --version
Docker version 20.10.5+dfsg1, build 55c4c88
sa1mamayoussef99@vm-to-pull-nginx:~$
```

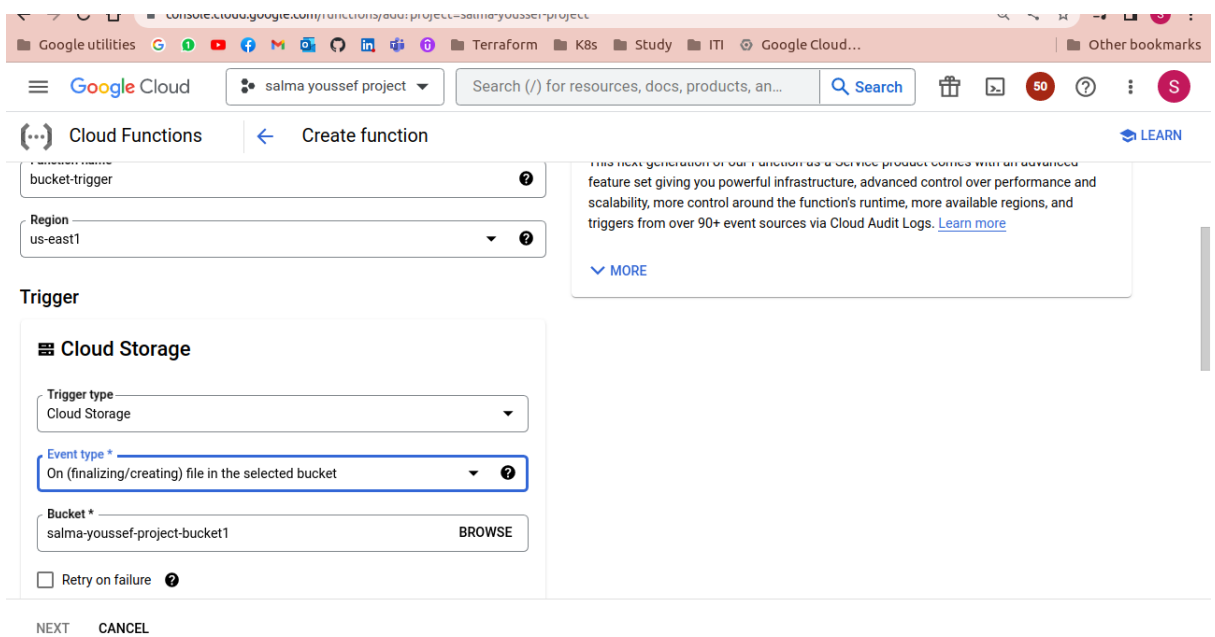
## pulling the vm:

```
sa1mamayoussef99@vm-to-pull-nginx:~$ sudo docker pull gcr.io/salma-youssef-project/nginx_img_gcr:v1
v1: Pulling from salma-youssef-project/nginx_img_gcr
3f4ca61aafcd: Pull complete
50c68654b16f: Pull complete
3ed295c083ec: Pull complete
40b838968eea: Pull complete
88d3ab68332d: Pull complete
5f63362a3fa3: Pull complete
Digest: sha256:9a821cadb1b13cb782ec66445325045b221345908a41c72d8d7cde94b33c8c
Status: Downloaded newer image for gcr.io/salma-youssef-project/nginx_img_gcr:v1
gcr.io/salma-youssef-project/nginx_img_gcr:v1
sa1mamayoussef99@vm-to-pull-nginx:~$ sudo docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
gcr.io/salma-youssef-project/nginx_img_gcr    v1          1403e55ab369     6 weeks ago     142MB
sa1mamayoussef99@vm-to-pull-nginx:~$
```

## Q2: enable APIs:



## create the function:



Google Cloud console interface showing the "Edit function" page for a Cloud Function named "hello\_gcs". The function is configured with Python 3.10 runtime and the "hello\_gcs" entry point. The source code is displayed in the "Code" tab, showing a function that triggers on a change to a Cloud Storage bucket and prints the file name. The function is ready to be deployed.

```
def hello_gcs(event, context):  
    # """Triggered by a change to a Cloud Storage bucket.  
    # Args:  
    #     event (dict): Event payload.  
    #     context (google.cloud.functions.Context): Metadata for the event.  
    # """  
    file = event  
    # print(f"Processing file: {file['name']}.")  
    print(f"{file['name']} was uploaded successfully")
```

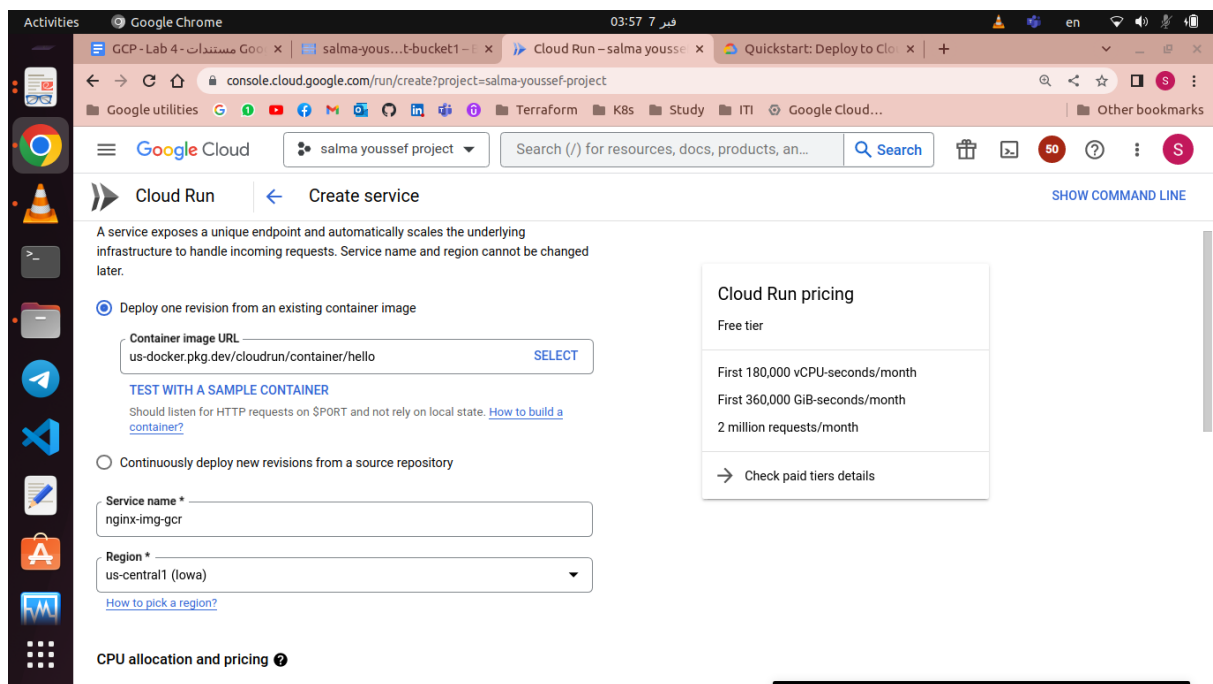
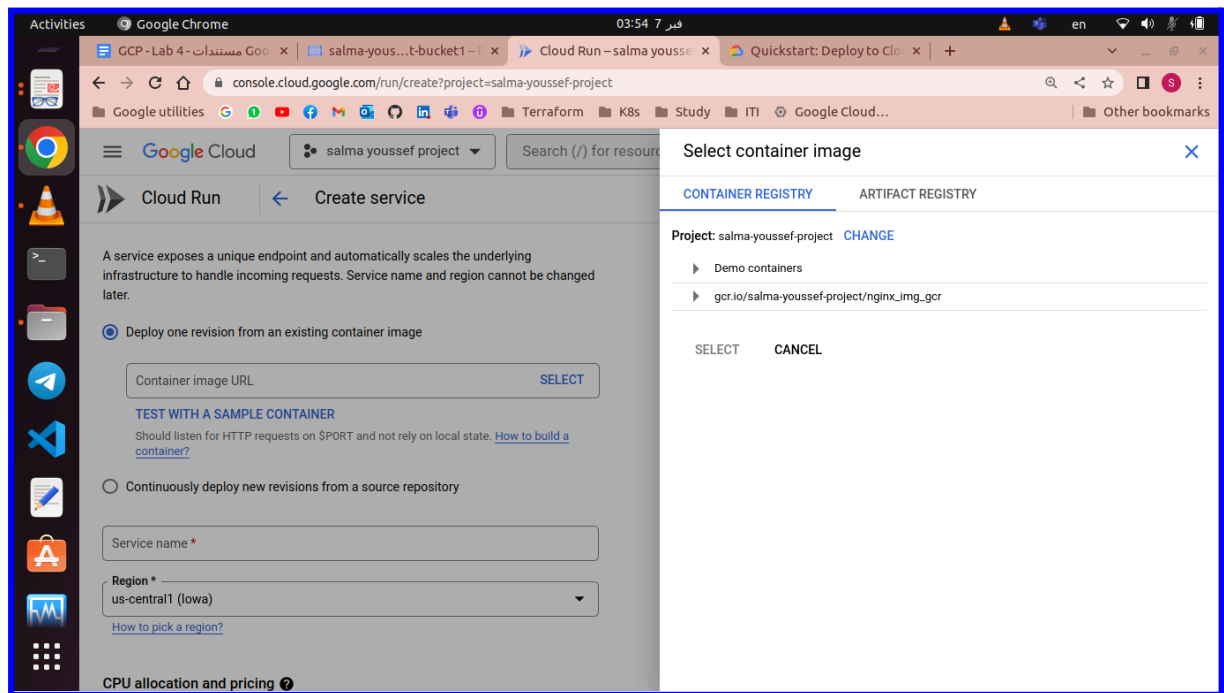
trigger the function by uploading GCS.txt file:

Google Cloud console interface showing the "salma-youssef-project-bucket1" bucket. The bucket is configured with Location: us-central1 (Iowa), Storage class: Standard, Public access: Subject to object ACLs, and Protection: None. The "OBJECTS" tab is selected, showing a list of objects: "GCS.txt" (24 B, text/plain) and "index.html" (23 B, text/html). A notification indicates "1 file successfully uploaded".

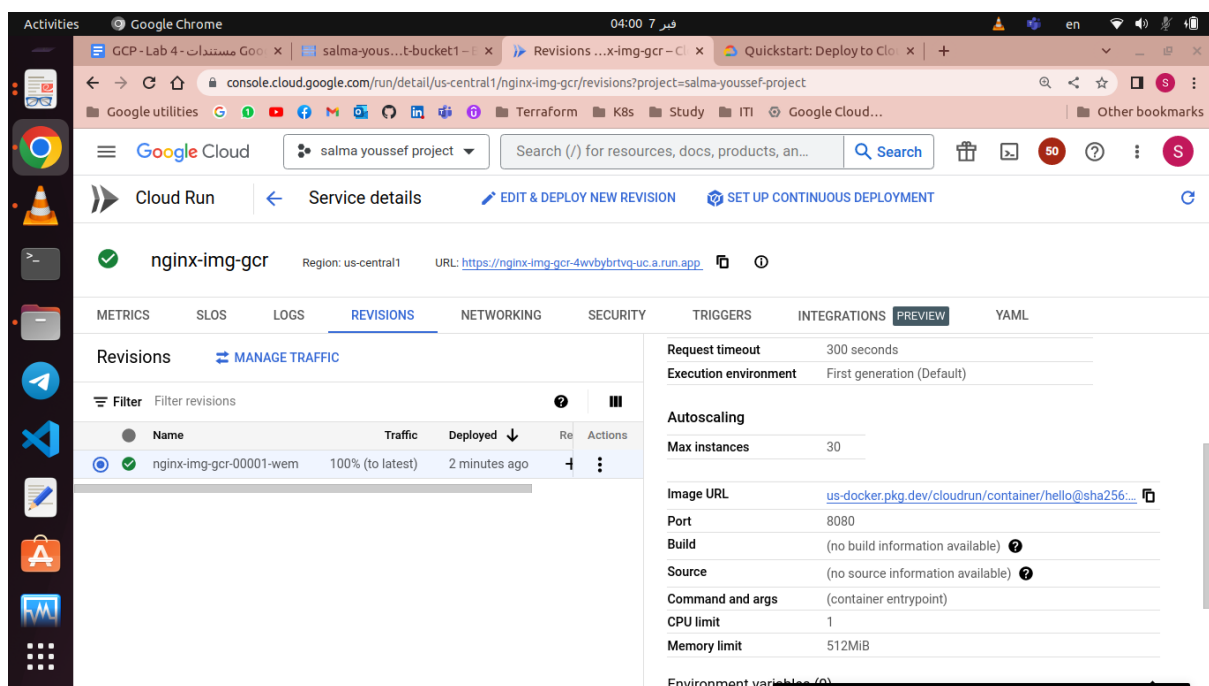
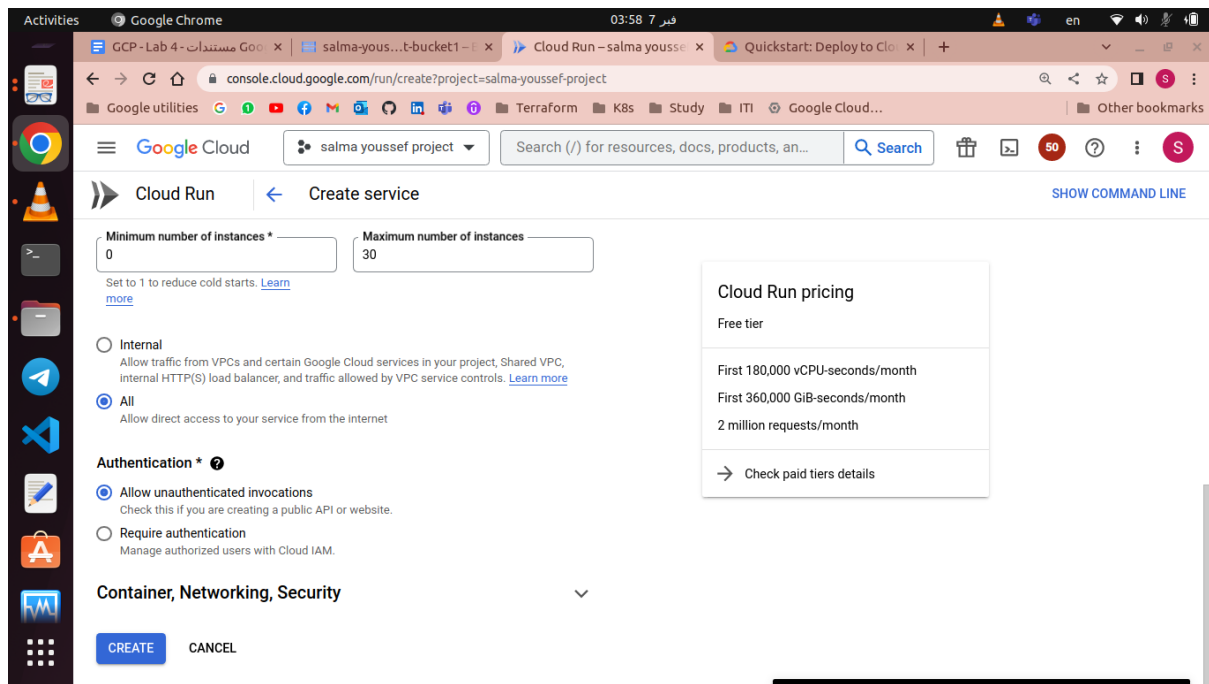
Name	Size	Type	Created	Storage class	Last modified
GCS.txt	24 B	text/plain	Feb 7, 2023, 3:44:03 AM	Standard	Feb 7, 2023, 3:44:03 AM
index.html	23 B	text/html	Feb 6, 2023, 10:55:02 PM	Standard	Feb 6, 2023, 10:55:02 PM

>	2023-02-07 03:44:04.657 EET	bucket-trigger-2 idu1qv3xwqx	Function execution started
>	2023-02-07 03:44:04.671 EET	bucket-trigger-2 idu1qv3xwqx	GCS.txt was uploaded successfully
>	2023-02-07 03:44:04.673 EET	bucket-trigger-2 idu1qv3xwqx	Function execution took 16 ms, finished with status: 'ok'
No newer entries found matching current filter.			

Q3:







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/helloworld$ vi main.py
d$ vi main.py
salmamyoussef@salmamyoussef-Satellite-C55-B:~/Documents/ITI-devops/GCP/helloworld$
```

create main.py file:

```
salmamyoussef@salmamyoussef-Satellite-C55-B: ~/D...
import os

from flask import Flask

app = Flask(__name__)

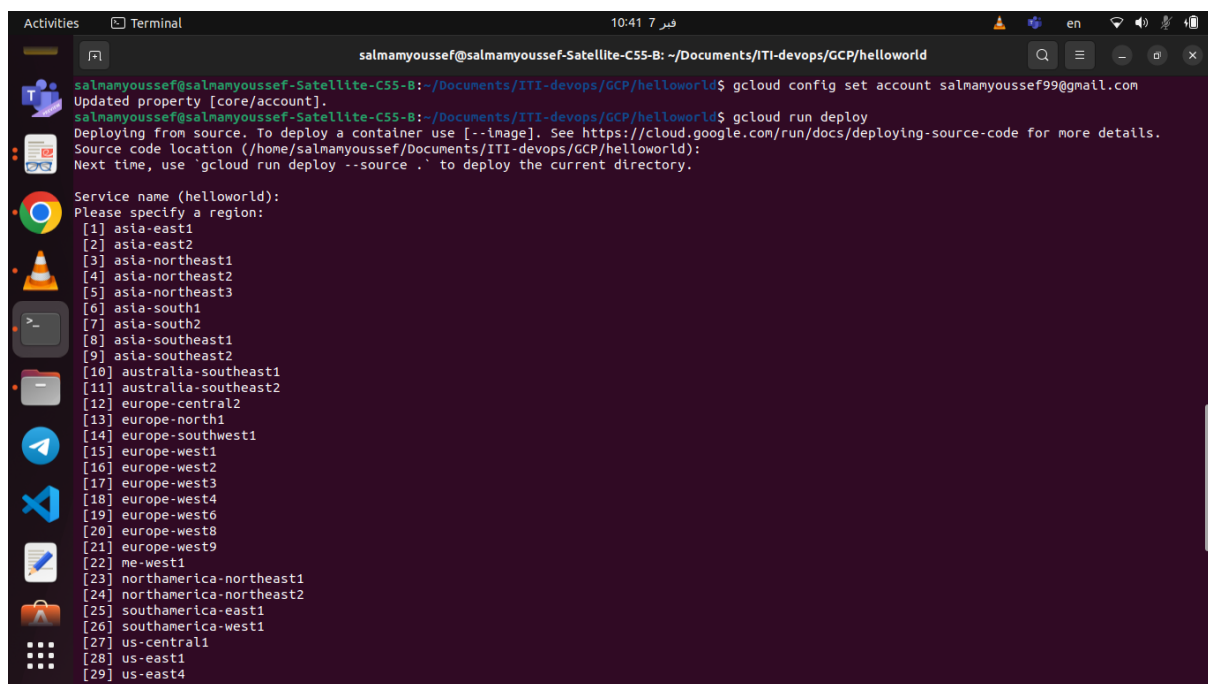
@app.route("/")
def hello_world():
    name = os.environ.get("NAME", "World")
    return "Hello {}!".format(name)

if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=int(os.environ.get("PORT", 8080)))

~
~
~
~
"main.py" [New File]
```

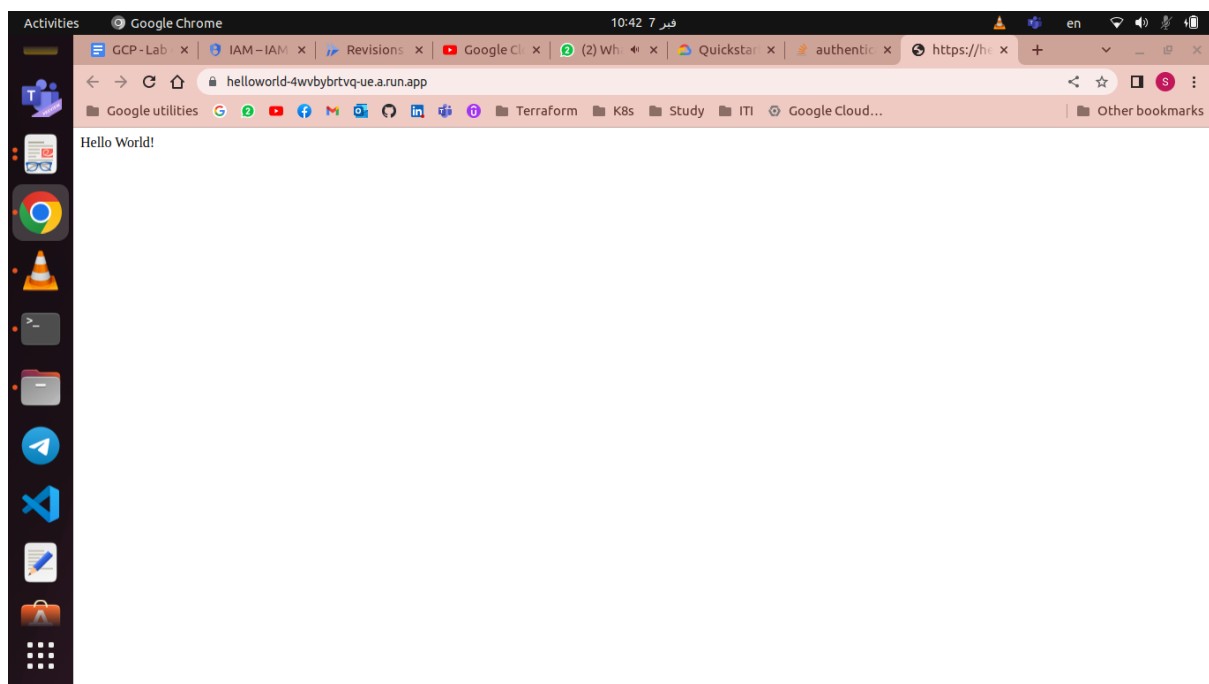
create requirements.txt file:





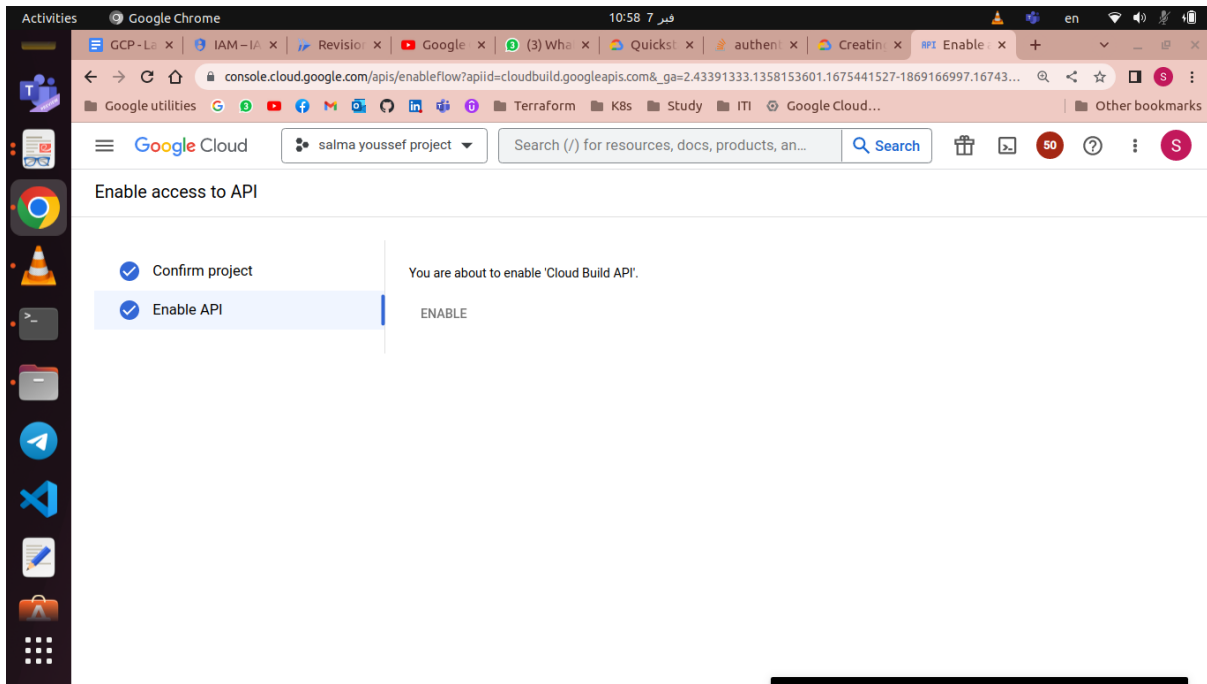
```
Activities Terminal 10:42 7 فبراير
salmamyoussef@salmamyoussef-Satellite-C55-B: ~/Documents/ITI-devops/GCP/helloworld

[26] southamerica-west1
[27] us-central1
[28] us-east1
[29] us-east4
[30] us-east5
[31] us-south1
[32] us-west1
[33] us-west2
[34] us-west3
[35] us-west4
[36] cancel
Please enter numeric choice or text value (must exactly match list item): 28
To make this the default region, run 'gcloud config set run/region us-east1'.
Deploying from source requires an Artifact Registry Docker repository to store built containers. A repository
named [cloud-run-source-deploy] in region [us-east1] will be created.
Do you want to continue (Y/n)? Y
This command is equivalent to running 'gcloud builds submit --tag [IMAGE] /home/salmamyoussef/Documents/ITI-devops/GCP/helloworld' and 'gcloud
run deploy helloworld --image [IMAGE]'
Allow unauthenticated invocations to [helloworld] (y/N)? y
Building using Dockerfile and deploying container to Cloud Run service [helloworld] in project [salma-youssef-project] region [us-east1]
✓ Building and deploying new service... Done.
✓ Creating Container Repository...
✓ Uploading sources...
✓ Building Container... Logs are available at [https://console.cloud.google.com/cloud-build/builds/624dad7a
-42a5-4763-90c8-45ba14aeccc4?project=779319977527].
✓ Creating Revision... Revision deployment finished. Checking container health.
✓ Routing traffic...
✓ Setting IAM Policy...
Done.
Service [helloworld] revision [helloworld-00001-lek] has been deployed and is serving 100 percent of traffic.
Service URL: https://helloworld-4wvbybrtvq-ue.a.run.app
salmamyoussef@salmamyoussef-Satellite-C55-B: ~/Documents/ITI-devops/GCP/helloworld$
```

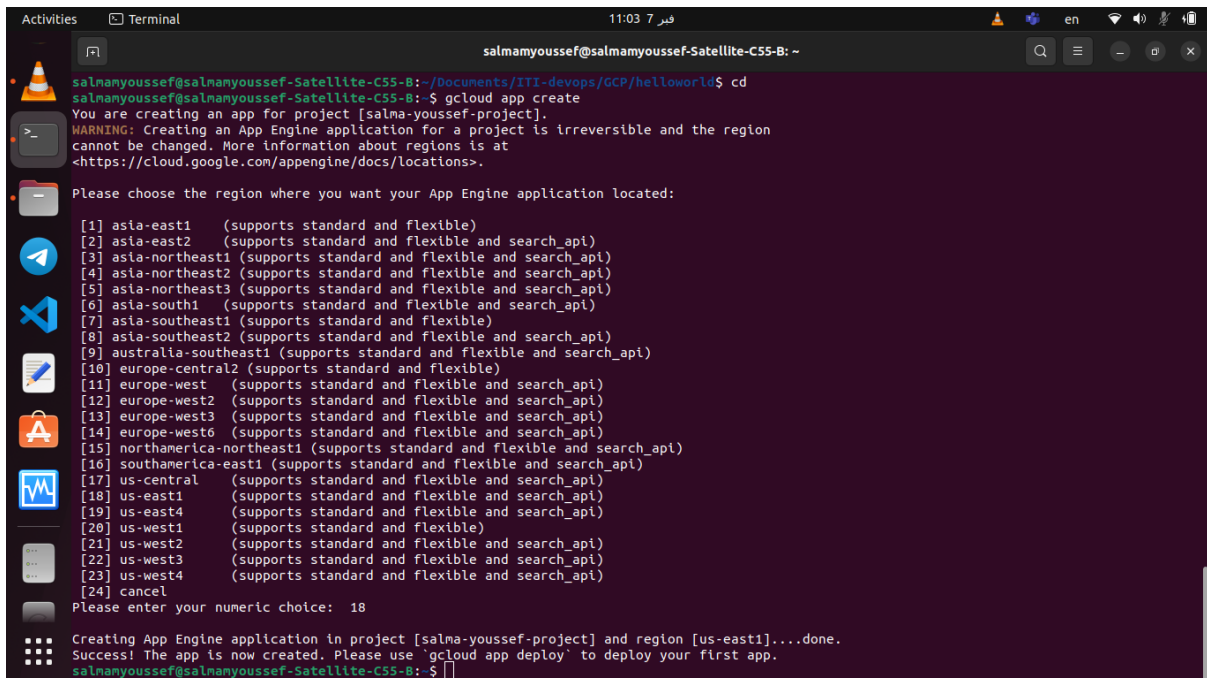


Q4:

## 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      code labs      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         speech
blog           datacatalog      favicon.ico     media_cdn        pubsub           pubsublite      storage
cloudbuild     dataflow         firestore      media_translation  pytest.ini       storagetransfer  tables
cloud-sql      datalabeling     functions       memorystore       README.md        talent
cloud_tasks    data-science-onramp  iam            ml_engine        renovate.json

```

```

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 -

```

GCF x Wri x Cre x IAM x htt x Rev x (3) x Dej x Gor x Qui x Cre x +  
 8080-cs-18c5cf9-9271-430a-8986-124dfdd26ea8.cs-europe-west1-xedi.cloudshell.dev/?authuser=0&redirectedPreviously=true  
 Google utilities G O F M B P Terraform K8s Study ITI Google Cloud... Other bookmarks  
 Hello World!