Week#5 Labs

Neha Agrawal

Table of Contents

05.1g: Storage, IAM

1. GCP Cloud Storage

No screenshots required

2. GCP Cloud Storage #1 (USGS)

- **What roles are attached to the Compute Engine default service account?**

  Editor permission for the service account

- **Would they be sufficient for the VM to perform its functions?**

  Editor can read, write, and deploy which would be sufficient for the VM to perform its functions

- **What permissions are given by the default access scope to Cloud Storage?**

Allow default access

BigQuery	Disabled
Bigtable Admin	Disabled
Bigtable Data	Disabled
Cloud Datastore	Disabled
Cloud Debugger	Disabled
Cloud Pub/Sub	Disabled
Cloud Source Repositories	Disabled
Cloud SQL	Disabled
Compute Engine	Disabled
Service Control	Enabled
Service Management	Read Only
Stackdriver Logging API	Write Only
Stackdriver Monitoring API	Write Only
Stackdriver Trace	Write Only
Storage	Read Only
Task queue	Disabled
User info	Disabled

The default access scope has the roles attached to the VM are overly restrictive

- **Would they be sufficient for the VM to perform its functions?**

  No, they do not provide full access to all cloud APIs

3. Cloud Storage access scope

No screenshots required

4. USGS data and setup

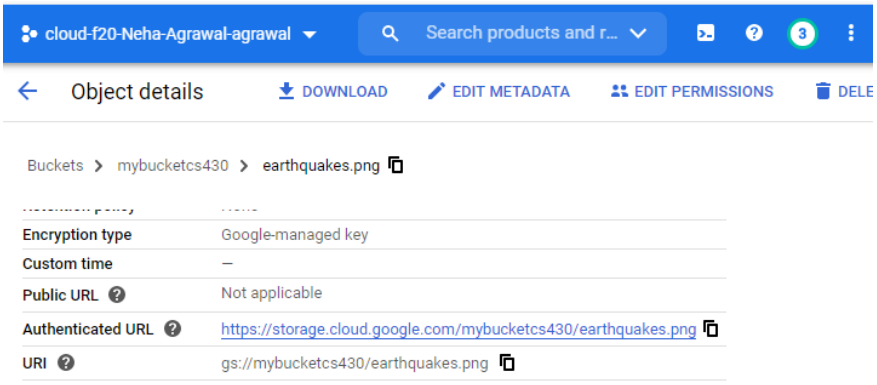
Answer the following question:

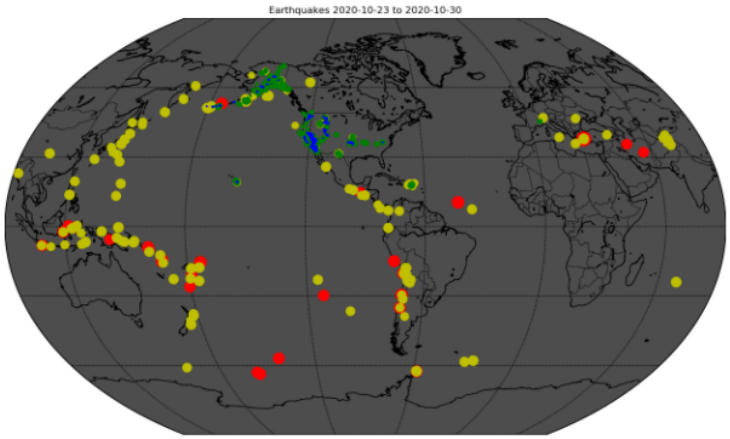
- **What time did the latest earthquake happen?**
  30 october 2020 at 18:04:47
- **What was the magnitude (mag)?**
  1.28
- **Where was the place it happened?**
  34km N of Searles Valley, CA

5. Python plotting code

No screenshots required

6. Create and distribute earthquake image





7. GCP Cloud Storage #2 (IAM roles)

No screenshots required

8. Create service account

No screenshots required

9. Create Compute Engine VM

No screenshots required

10. Service account roles (Compute)

- **What is the exact error message that is returned?**

```
agrawal@gcs-lab-vm:~$ gcloud compute instances list
ERROR: (gcloud.compute.instances.list) Some requests did not succeed:
 - Required 'compute.zones.list' permission for 'projects/cloud-f20-neha-agrawal-agrawal'
```

Go back to the VM and repeat the command until it succeeds. Take a screenshot of the output for your notebook.

```
agrawal@gcs-lab-vm:~$ gcloud compute instances list
NAME        ZONE        MACHINE_TYPE  PREEMPTIBLE  INTERNAL_IP  EXTERNAL_IP     STATUS
gcs-lab-vm  us-west1-b  f1-micro                   10.138.0.15  35.199.188.135  RUNNING
instance-1  us-west1-b  f1-micro                   10.138.0.14  35.227.153.98   RUNNING
```

Answer the following question for your lab notebook.

- **What role needs to be added to the service account's permissions for the VM to have access to list the project's Compute Engine instances?**

I added Compute Instance Admin (v1) role to the service account. This enables Full control of Compute Engine instances, instance groups, disks, snapshots, and images. Read access to all Compute Engine networking resources

Reference: https://cloud.google.com/compute/docs/access/iam

11. Service account roles (Storage)

- **What is the exact error message that is returned?**

Access denied exception

```
agrawal@gcs-lab-vm:~$ gsutil cp moonquakes.png gs://mybucketcs430/
Copying file://moonquakes.png [Content-Type=image/png]...
AccessDeniedException: 403 gcs-lab@cloud-f20-neha-agrawal-agrawal.iam.gserviceaccount.com does not have storage.obj
ects.create access to mybucketcs430/moonquakes.png.
```

Go back to the VM and repeat the `gsutil` command until it succeeds. Take a screenshot of the output for your notebook.

```
agrawal@gcs-lab-vm:~$ gsutil cp moonquakes.png gs://mybucketcs430/
Copying file://moonquakes.png [Content-Type=image/png]...
/ [1 files][316.2 KiB/316.2 KiB]
Operation completed over 1 objects/316.2 KiB.
```

Answer the following question:

- **What role needs to be added to the service account's permissions for the VM to have access to add an object to the storage bucket?**

  Storage object Admin role is need to be added to the service account's permissions for the VM to have access to add an object to the storage bucket.

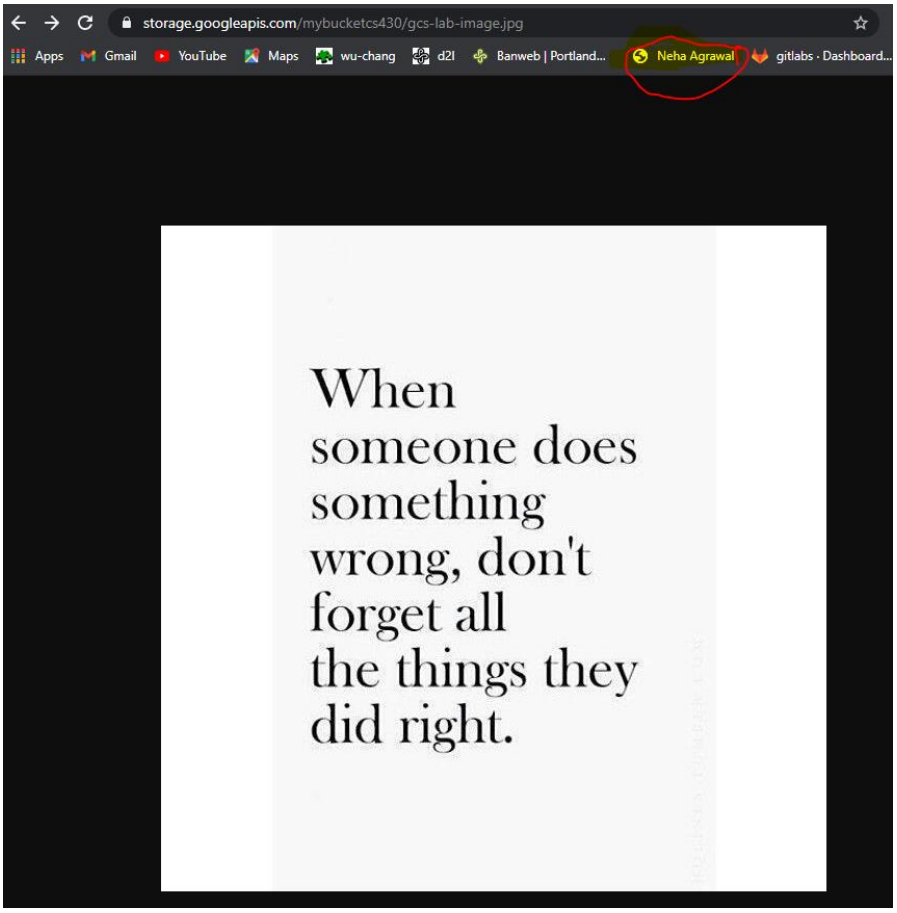
12. GCP Cloud Storage #3 (Python)

No screenshots required

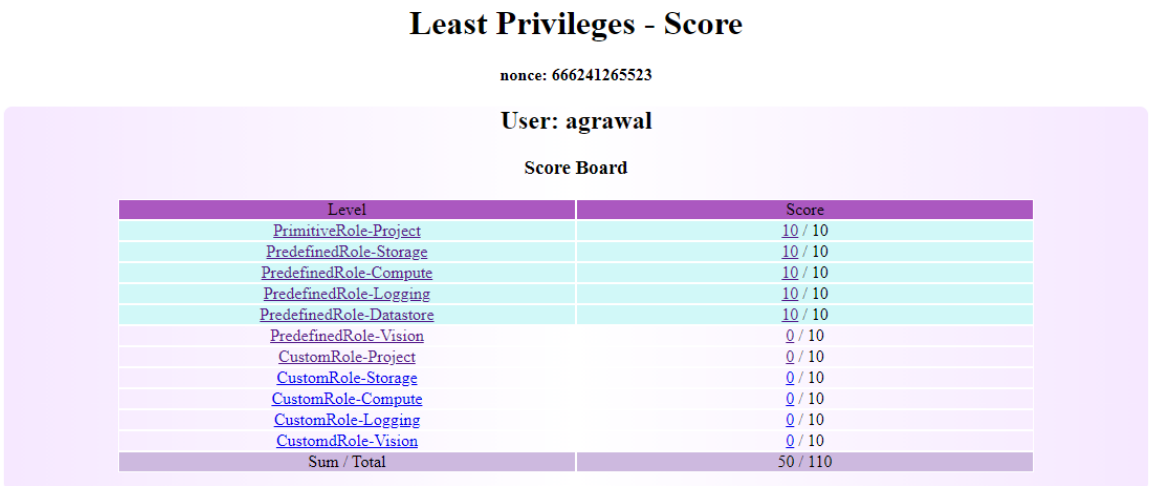
13. Python storage code

No screenshots required

14. View object



15. IAM and least privileges #4



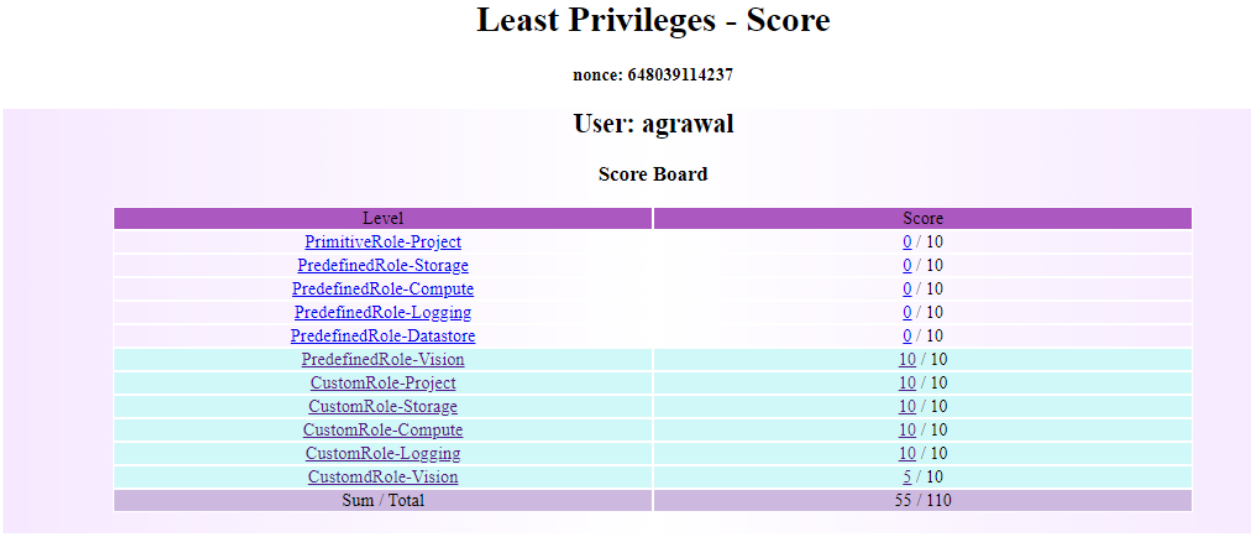
Least Privileges - Score

nonce: 666241265523

User: agrawal

Score Board

Level	Score
PrimitiveRole-Project	10 / 10
PredefinedRole-Storage	10 / 10
PredefinedRole-Compute	10 / 10
PredefinedRole-Logging	10 / 10
PredefinedRole-Datastore	10 / 10
PredefinedRole-Vision	0 / 10
CustomRole-Project	0 / 10
CustomRole-Storage	0 / 10
CustomRole-Compute	0 / 10
CustomRole-Logging	0 / 10
CustomdRole-Vision	0 / 10
Sum / Total	50 / 110



Least Privileges - Score

nonce: 648039114237

User: agrawal

Score Board

Level	Score
PrimitiveRole-Project	0 / 10
PredefinedRole-Storage	0 / 10
PredefinedRole-Compute	0 / 10
PredefinedRole-Logging	0 / 10
PredefinedRole-Datastore	0 / 10
PredefinedRole-Vision	10 / 10
CustomRole-Project	10 / 10
CustomRole-Storage	10 / 10
CustomRole-Compute	10 / 10
CustomRole-Logging	10 / 10
CustomdRole-Vision	5 / 10
Sum / Total	55 / 110

16. Clean up

No screenshots required

05.2a: DynamoDB Guestbook

1. DynamoDB

No screenshots required

2. model_dynamodb

No screenshots required

3. Version 1: Ubuntu VM Python

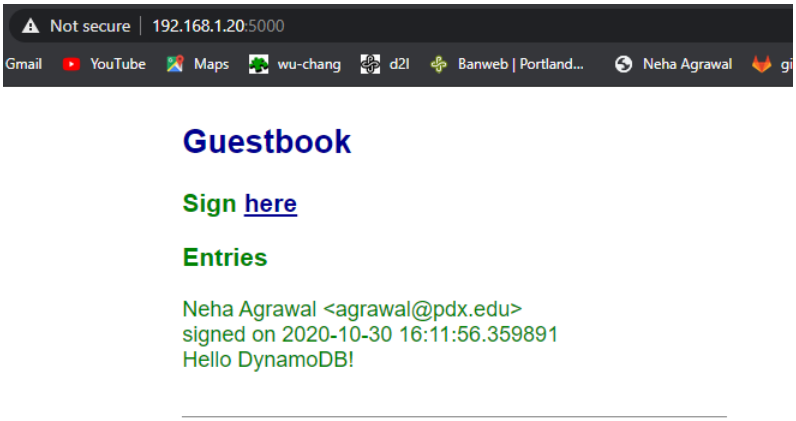
No screenshots required

4. Obtain AWS credentials

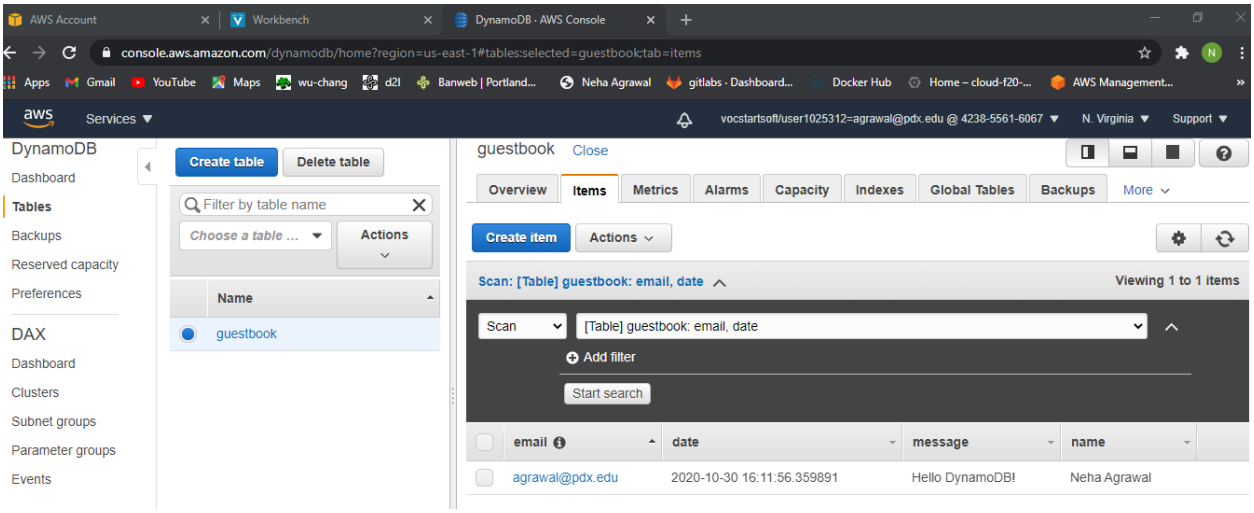
No screenshots required

5. Run the application

The application comes up on Flask's default port. Click on the URL given to launch a browser to load the application or visit http://localhost:5000 to view the application running. Sign the guestbook with your name and PSU e-mail address with the message "Hello DynamoDB" and take a screenshot of the output for your lab notebook. Type "Ctrl-c" to exit the application.



Then, from the Vocareum console shown above click on "AWS Console". Note that you must allow pop-ups in order to launch the console. Navigate to the DynamoDB service, click on "Tables" to list the tables that have been created, and then click on the "guestbook" table that has just been created by the Python application. Click on the "Items" tab and take a screenshot of the entry you have just added to your DynamoDB instance for your lab notebook.

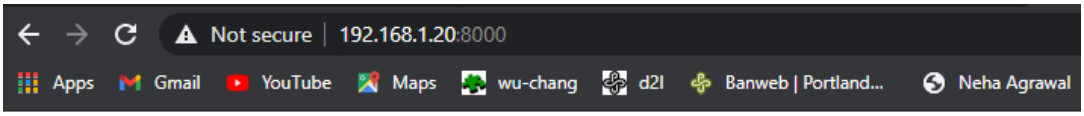


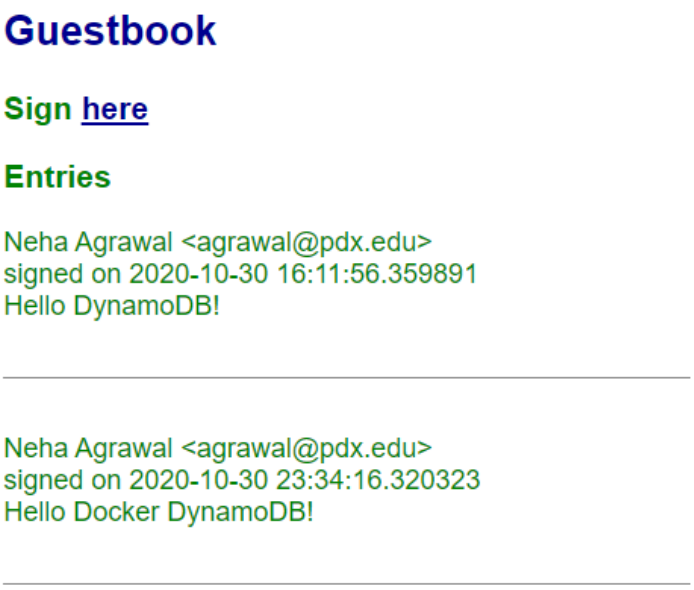
6. Version 2: Ubuntu VM Docker

No screenshots required

7. Run the application

Bring up a browser on your Ubuntu VM and visit the application via http://localhost:8000. Sign the guestbook with your name and PSU e-mail address with the message "Hello Docker DynamoDB" and take a screenshot of the output for your lab notebook. Type "Ctrl-c" to exit the container.





8. Push the container image

No screenshots required

9. Version 3: AWS Cloud9 IDE

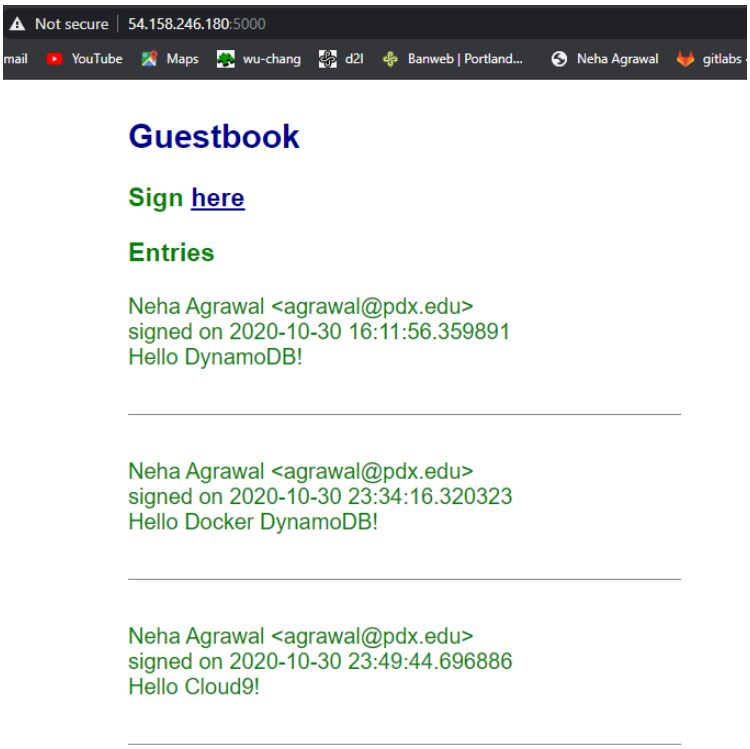
No screenshots required

10. Configure the Security Group

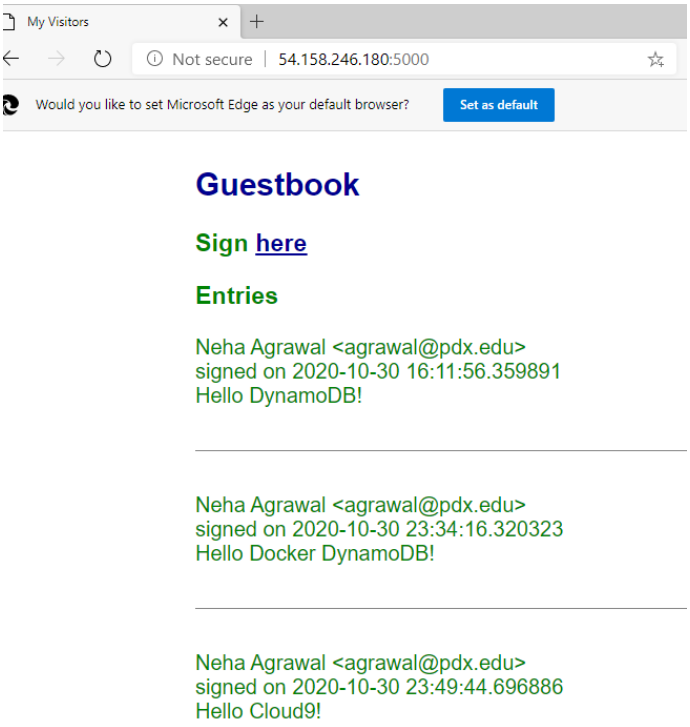
No screenshots required

11. Run the application

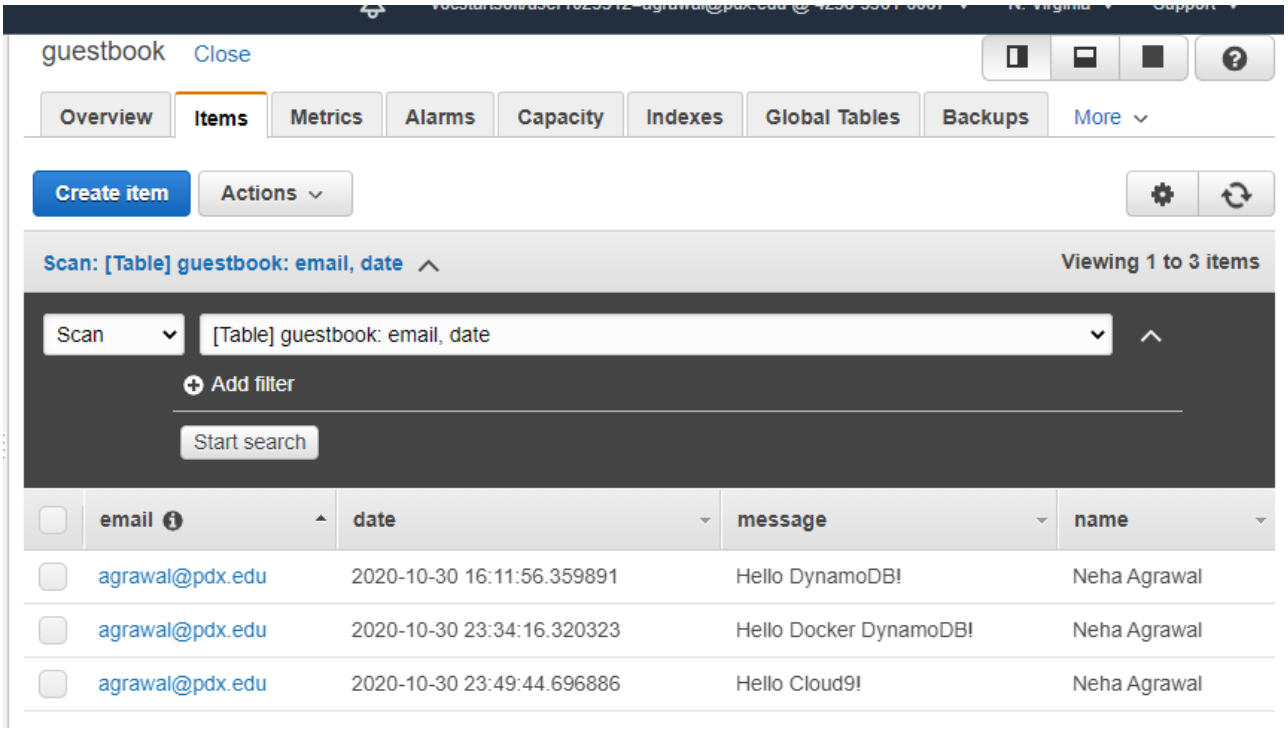
Visit the Guesbook at the IP address you noted earlier on port 5000. Add a guestbook entry that uses your name and PSU email with a message "Hello Cloud9!". Take a screenshot as before that shows your entry and the IP address in the URL bar



The entry has been added to the DynamoDB guestbook table. Visit the guestbook in another browser and show the entry there.



Select the Items tab and take a screenshot like the one below that shows the guestbook entry that you added to the table.



12. Version 4: AWS EC2

No screenshots required

13. Launch the instance

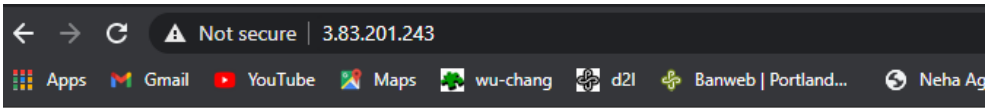
No screenshots required

14. Set up the instance

No screenshots required

15. Visit the application

Add a guestbook entry that uses your name and PSU email with a message "Hello EC2!". Take a screenshot as before that shows your entry and the IP address in the URL bar.



Guestbook

Sign here

Entries

Neha Agrawal <agrawal@pdx.edu>
signed on 2020-10-30 16:11:56.359891
Hello DynamoDB!

Neha Agrawal <agrawal@pdx.edu>
signed on 2020-10-30 23:34:16.320323
Hello Docker DynamoDB!

Neha Agrawal <agrawal@pdx.edu>
signed on 2020-10-30 23:49:44.696886
Hello Cloud9!

Neha Agrawal <agrawal@pdx.edu>
signed on 2020-10-31 00:12:25.176541
Hello EC2!

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16. Clean-up
    No screenshots required

05.2g: Cloud Datastore Guestbook

1. Cloud Datastore
    No screenshots required

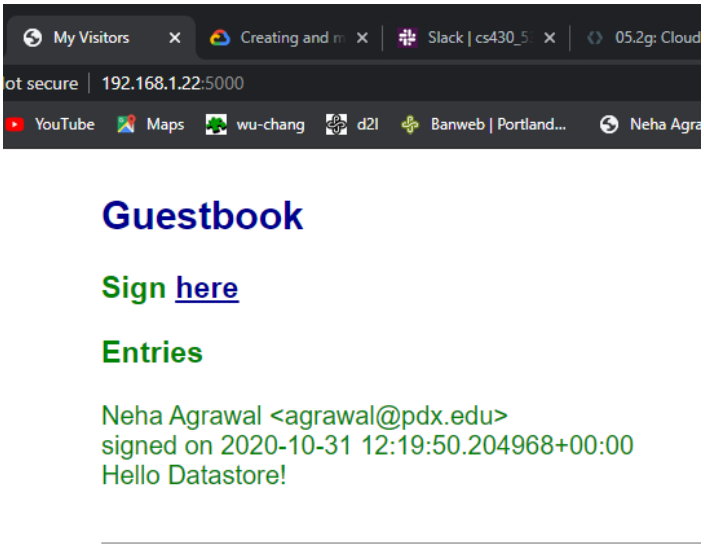
2. model_datastore
    No screenshots required

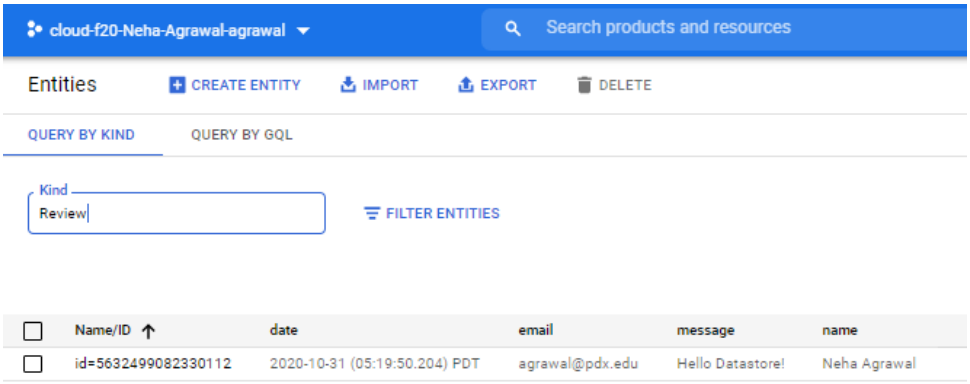
3. Datastore setup
    No screenshots required

4. Version 1: Ubuntu VM Python
    No screenshots required

5. Obtain GCP credentials
    No screenshots required

6. Run the application

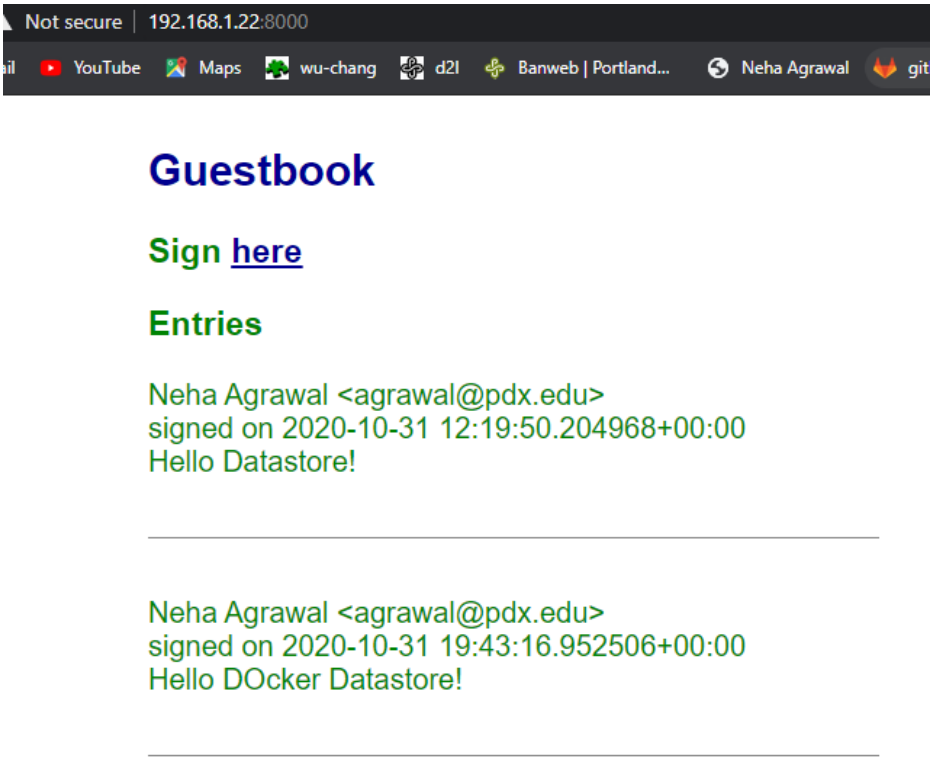




7. Version 2: Ubuntu VM Docker

No screenshots required

8. Run the application



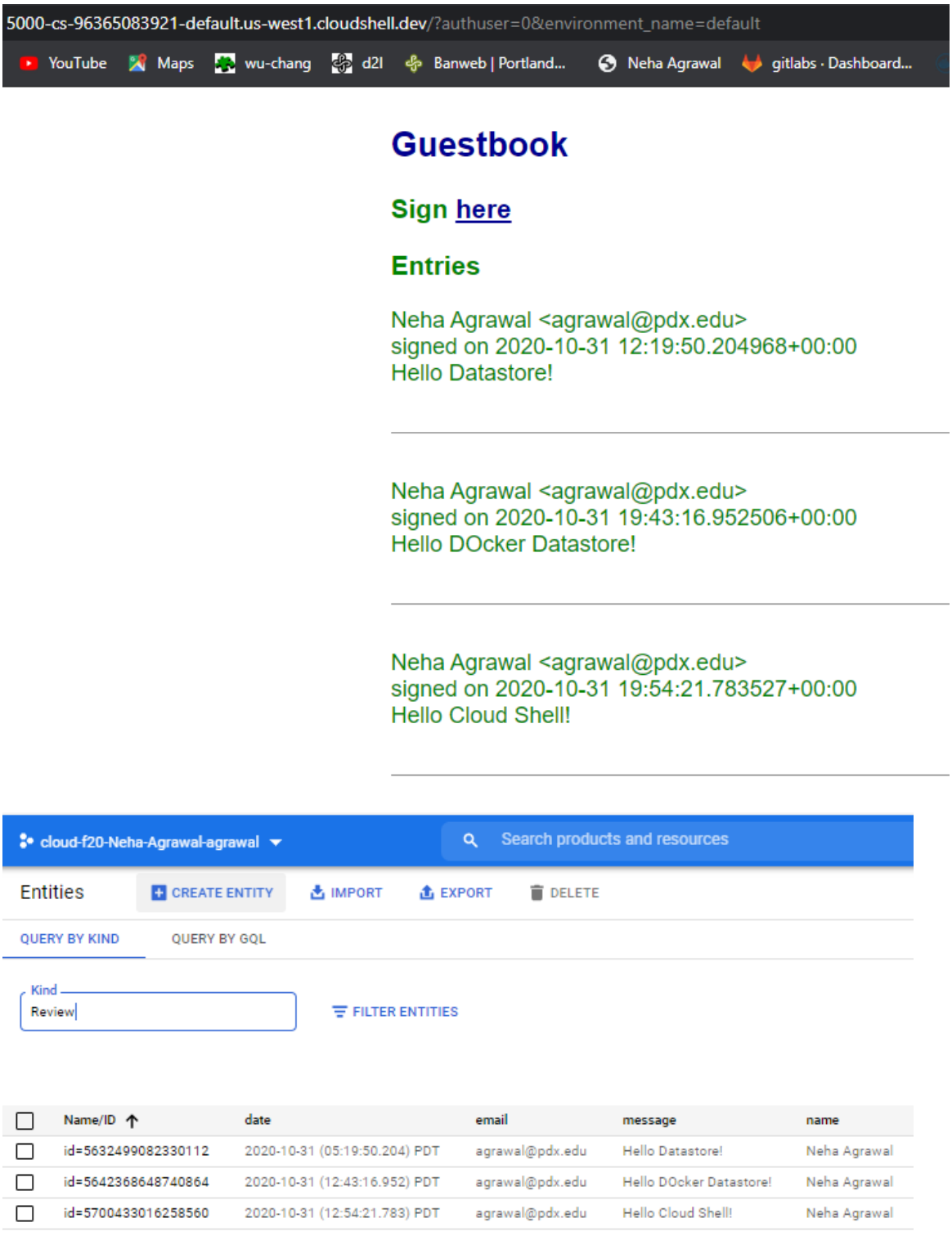
9. Push the container image

No screenshots required

10. Version 3: GCP Cloud Shell

No screenshots required

11. Run the application

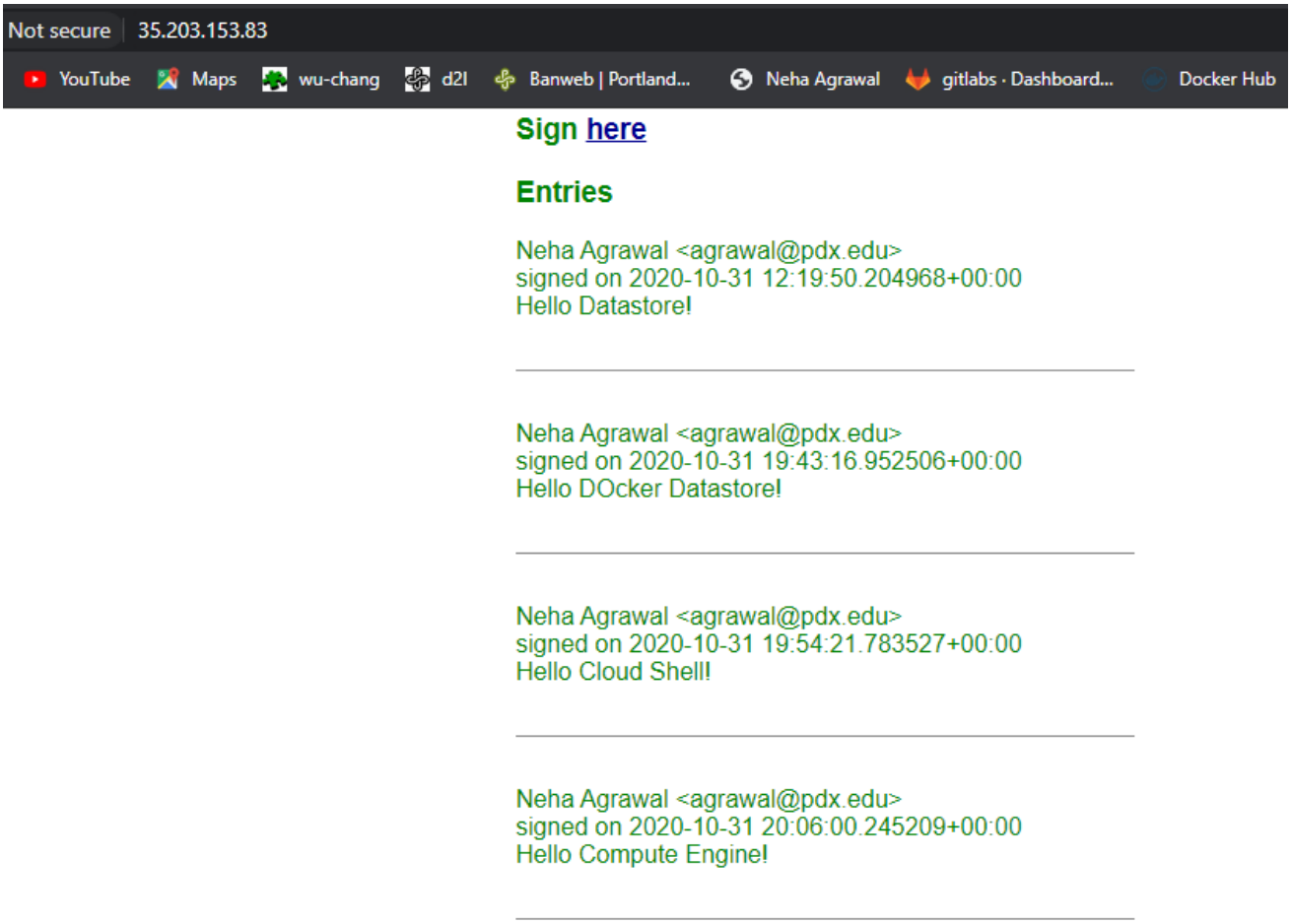


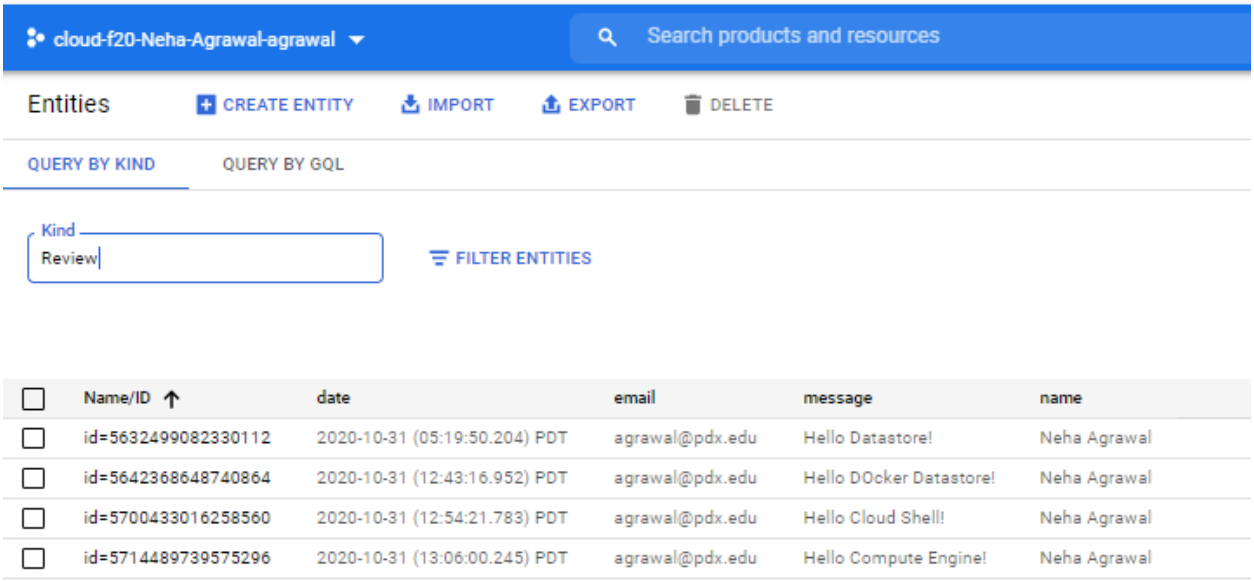
12. Version 4: GCP Compute Engine
    No screenshots required

13. Configure service account
    No screenshots required

14. Set up the instance
    No screenshots required

15. Visit the application




cloud-f20-Neha-Agrawal-agrawal
Search products and resources
Entities
CREATE ENTITY
IMPORT
EXPORT
DELETE
QUERY BY KIND
QUERY BY GQL
Kind
Review
FILTER ENTITIES
Name/ID
date
email
message
name
id=5632499082330112
2020-10-31 (05:19:50.204) PDT
agrawal@pdx.edu
Hello Datastore!
Neha Agrawal
id=5642368648740864
2020-10-31 (12:43:16.952) PDT
agrawal@pdx.edu
Hello DOcker Datastore!
Neha Agrawal
id=5700433016258560
2020-10-31 (12:54:21.783) PDT
agrawal@pdx.edu
Hello Cloud Shell!
Neha Agrawal
id=5714489739575296
2020-10-31 (13:06:00.245) PDT
agrawal@pdx.edu
Hello Compute Engine!
Neha Agrawal