

# Lab Week 5

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# Section 5 - Storage IAM

## 5.1 GCP Cloud Storage

### 5.1.1 What roles are attached to the Compute Engine default service account?

Editor role is attached

### 5.1.2 Would they be sufficient for the VM to perform its functions (i.e. creating buckets and reading/writing objects in them)?

Answer: To perform functions such as creating buckets and reading/writing objects in them, the role of "Editor" in Google Cloud Platform should be sufficient.

### 5.1.3 What permissions are given by the default access scope to Cloud Storage?

Answer:

Default: read-only access to Storage and Service Management, write access to Stackdriver Logging and Monitoring, read/write access to Service Control.

### 5.1.4 Would they be sufficient for the VM to perform its functions (i.e. creating buckets and reading/writing objects in them)?

Answer:

The default access permissions which are mentioned would not be sufficient for a VM to perform its functions of creating buckets and reading/writing objects in Google Cloud Storage.

### 5.1.5 What settings are possible for setting the VM's access to the Storage API?

Answer: None, Read Only, Read Write, Write, Full

### 5.1.6 What time did the latest earthquake happen?

2023-05-02T00:33:20.710Z

### 5.1.7 What was the magnitude (mag)?

0.92

### 5.1.8 Where was the place it happened?

3km WSW of Cobb, CA

kishan@kishan-ROG-Strix-G531GT-G531GT:~

```
File Edit View Search Terminal Help
kishan@kishan-ROG-Strix-G531GT-G531GT:~$ 
```

Mozilla Firefox

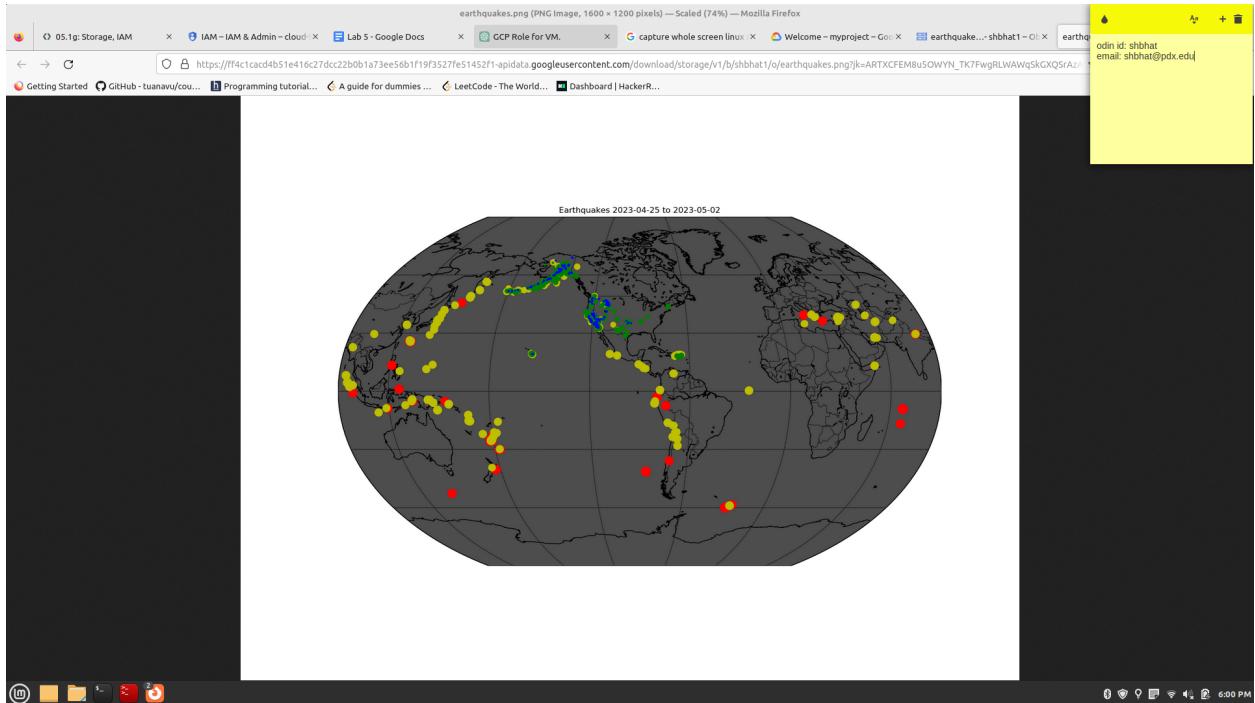
SSH-in-browser

applicable law.

```
shbhat@usgs:~$ git clone https://github.com/GoogleCloudPlatform/training-data-analyst
Cloning into 'training-data-analyst'...
remote: Enumerating objects: 28281, done.
remote: Compressing objects: 100% (297/297), done.
remote: Writing objects: 100% (28281/28281), done.
remote: Total 62891 (delta 280), reused 412 (delta 209), pack-reused 62350
remote: Resolving deltas: 100% (14891/14891), done.
Resolving deltas: 100% (12835/12835), done.
Updating files: 100% (12835/12835), done.
shbhat@usgs:~$ cd training-data-analyst/CPB100/lab02
shbhat@usgs:~/training-data-analyst/CPB100/lab02$ ls
commands.sh  earthquakes.csv  ingest.sh  pipeline.sh  scheduled_transform.py
shbhat@usgs:~/training-data-analyst/CPB100/lab02$ wget https://earthquake.usgs.gov/earthquakes/feed/v1.0/summary/all_week.csv
--2023-05-02 00:46:10-- https://earthquake.usgs.gov/earthquakes/feed/v1.0/summary/all_week.csv
Resolving earthquake.usgs.gov (earthquake.usgs.gov)... 52.84.162.8, 52.84.162.38, 52.84.162.96, ...
Connecting to earthquake.usgs.gov (earthquake.usgs.gov)|52.84.162.8|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/csv]
Saving to: 'earthquakes.csv'

earthquakes.csv                                         [=>] 474.56K  --.-KB/s   in 0.02s
2023-05-02 00:46:10 (19.5 MB/s) - 'earthquakes.csv' saved [488951]
shbhat@usgs:~/training-data-analyst/CPB100/lab02$ 
shbhat@usgs:~/training-data-analyst/CPB100/lab02$ head -2 earthquakes.csv
time,latitude,longitude,depth,mag,magType,nst,gap,dmin,rms,net,id,updated,place,type,horizontalError,depthError,magError,magNst,status,locationSource,magSource
2023-05-02T00:32:26.710Z,38.8105011,-122.7581635,6.07,0.92,nd,7,210,0.099936,0.11,nc,nc73882986,2023-05-02T00:34:57.617Z,"3km WSW of Cobb, CA",earthquake,2.96,4.74,0.13,9,automatic,nc,nc
shbhat@usgs:~/training-data-analyst/CPB100/lab02$ head -2 earthquakes.csv
time,latitude,longitude,depth,mag,magType,nst,gap,dmin,rms,net,id,updated,place,type,horizontalError,depthError,magError,magNst,status,locationSource,magSource
2023-05-02T00:32:26.710Z,38.8105011,-122.7581635,6.07,0.92,nd,7,210,0.099936,0.11,nc,nc73882986,2023-05-02T00:34:57.617Z,"3km WSW of Cobb, CA",earthquake,2.96,4.74,0.13,9,automatic,nc,nc
shbhat@usgs:~/training-data-analyst/CPB100/lab02$ 
shbhat@usgs:~/training-data-analyst/CPB100/lab02$ sudo apt-get update -y
Hit:1 http://us-west1.gcr.archive.ubuntu.com/ubuntu Focal InRelease [114 kB]
Get:2 http://us-west1.gcs.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
```

odin id: shbhat  
email: shbhat@pdx.edu

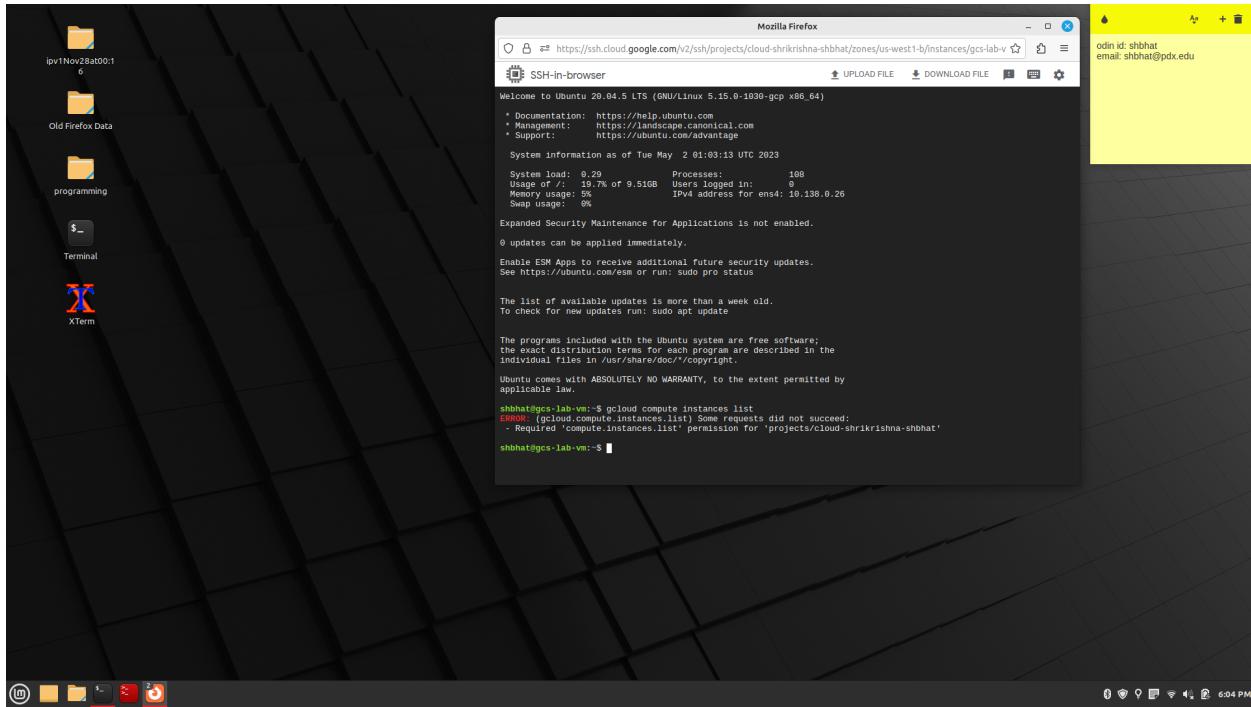


## 5.2 GCP Cloud Storage #2 (IAM roles)

### 5.2.1 What is the exact error message that is returned?

ERROR: (gcloud.compute.instances.list) Some requests did not succeed:

- Required 'compute.instances.list' permission for 'projects/cloud-shrikrishna-shbhat'



### 5.2.2 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?

Compute Viewer role was to be added

### 5.2.3 Take a screenshot of the output for your notebook.

IAM - IAM & Admin - cloud-Shrikrishna-shbhat - Google Cloud console — Mozilla Firefox

Getting Started GitHub - tuanuu/cou... Programming tutorial... A guide for dummies... LeetCode

Google Cloud cloud-Shrikrishna-shbhat Search (/) for resources, documentation, help

**IAM & Admin**

**IAM**

GRANT ACCESS REMOVE ACCESS

PERMISSIONS RECOMMENDATIONS HISTORY

**Permissions for project "cloud-Shrikrishna-shbhat"**

These permissions affect this project and all of its resources. [Learn more](#)

**VIEW BY PRINCIPALS** **VIEW BY ROLES**

Filter Enter property name or value

Type Principal ↑

- 557588342218-compute@developer.gserviceaccount.com
- gcs-lab@cloud-shrikrishna-shbhat.iam.gserviceaccount.com
- shbhat@pdx.edu

The programs included with the Ubuntu system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/\*copyright\*.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.

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

```
shbhat@gcs-lab-vm:~$ gcloud compute instances list
NAME ZONE MACHINE_TYPE PREEMPTIBLE INTERNAL_IP EXTERNAL_IP STATUS
gcs-lab-vm us-west1-b e2-medium          10.138.0.26 34.82.86.144 RUNNING
usgs us-west1-b e2-medium          10.138.0.25 35.247.58.55 RUNNING
```

shbhat@gcs-lab-vm:~\$ cp moonquakes.png gs://shbhat1/earthquakes.png
Copying gs://shbhat1/earthquakes.png...
[1 files] 316.0 KiB/316.0 KiB

AccessDeniedException: 403 gcs-lab@cloud-shrikrishna-shbhat.iam.gserviceaccount.com does not have storage.objects.create access to the Google Cloud Storage object. Permission 'storage.objects.create' denied on resource (or it may not exist).

odin id: shbhat  
email: shbhat@pdx.edu

Cloud console Help document Learn how to use the Google Cloud console to grant IAM roles to principals at the project level.

IAM overview Help document Basic IAM concepts and access management in Google Cloud.

Roles and permissions Help document Learn roles and permissions, which dictate what access a principal has.

Basic and predefined roles reference Help document IAM roles that you can grant to identities to access Google Cloud resources.

Manage access to projects, folders, and organizations Help document Grant, change, and revoke access to projects, folders, and organizations.

Understanding allow policies Help document Learn about allow policies, which grant principals access to Google Cloud resources.

Policy updated

## 5.2.4 What is the exact error message that is returned?

shbhat@gcs-lab-vm:~\$ gsutil cp moonquakes.png gs://shbhat1/

Copying file://moonquakes.png [Content-Type=image/png]...

AccessDeniedException: 403 gcs-lab@cloud-shrikrishna-shbhat.iam.gserviceaccount.com does not have storage.objects.create access t

Pictures

File Edit View Go Bookmarks Help

/home/kishan/Pictures

My Computer

- Home
- Desktop
- Documents
- Music
- Pictures**
- Videos
- Downloads
- Recent
- File System
- Devices
- DATA
- OS
- Network

Screenshot from 2023-01-10 13-53-38.png

SSH-in-browser

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates. See <https://ubuntu.com/esm> or run: sudo pro status

The list of available updates is more than a week old. To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/\*copyright\*.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.

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

```
shbhat@gcs-lab-vm:~$ gcloud compute instances list
NAME ZONE MACHINE_TYPE PREEMPTIBLE INTERNAL_IP EXTERNAL_IP STATUS
gcs-lab-vm us-west1-b e2-medium          10.138.0.26 34.82.86.144 RUNNING
usgs us-west1-b e2-medium          10.138.0.25 35.247.58.55 RUNNING
```

```
shbhat@gcs-lab-vm:~$ cp moonquakes.png gs://shbhat1/earthquakes.png
Copying gs://shbhat1/earthquakes.png...
[1 files] 316.0 KiB/316.0 KiB
```

```
AccessDeniedException: 403 gcs-lab@cloud-shrikrishna-shbhat.iam.gserviceaccount.com does not have storage.objects.create access to the Google Cloud Storage object. Permission 'storage.objects.create' denied on resource (or it may not exist).
```

odin id: shbhat  
email: shbhat@pdx.edu

"Screenshot from 2023-01-10 13-53-38.png" selected (369.3 kB), Free space: 32.6 GB

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

**Answer:** Storage Object Creator

## 5.2.5 Take a screenshot of the output for your notebook.

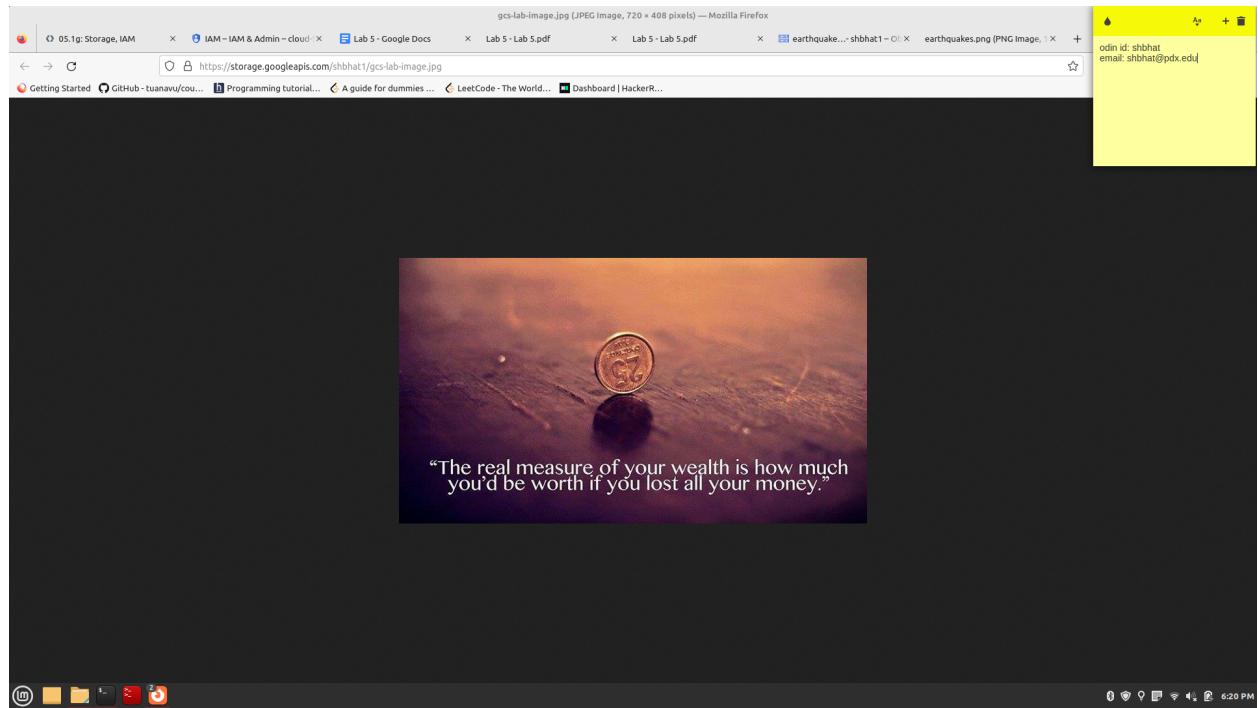
The screenshot shows a browser window with multiple tabs and a sidebar on the left. The sidebar contains numbered steps from 1 to 14, with step 14 being highlighted by a yellow box. The main content area shows a terminal window with the following output:

```
shbhat@gcs-lab-vm:~$ gcloud compute instances list
NAME          ZONE      MACHINE_TYPE PREEMPTIBLE INTERNAL_IP  EXTERNAL_IP STATUS
gcs-lab-vm   us-west1-b e2-medium    PREEMPTIBLE  10.129.0.26  34.82.86.144 RUNNING
usgs         us-west1-b n1-standard  PREEMPTIBLE  10.138.0.29  35.247.58.55 RUNNING
shbhat@gcs-lab-vm:~$ gsutil cp gs://shbhat1/earthquakes.png .
Copying file://moonguakes.png [Content-Type:Image/png]...
AccessDeniedException: 403 gs://labelcloud-shrkrishna-shbhat.iam.gserviceaccount.com does not have storage.objects.create permission on the Google Cloud Storage object. Permission 'storage.objects.create' denied on resource (or it may not exist).
shbhat@gcs-lab-vm:~$ gsutil cp moonguakes.png gs://shbhat1/
Copying file://moonguakes.png [Content-Type:Image/png]...
/[1 files][216.0 KiB/216.0 KiB]
Operation completed over 1 objects/315.0 KiB.
shbhat@gcs-lab-vm:~$
```

Below the terminal window, there is a note: "Take a screenshot of the output for your notebook." At the bottom right, there are "Back" and "Next" buttons. The status bar at the bottom shows system icons and the time 6:15 PM.

## 5.3 Google Cloud Storage

### 5.3.1 Take a screenshot the shows the entire URL and the image that has been retrieved:



## 5.4 IAM and least privileges #4

Level 1

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Check Privileges pr PrimitiveRole-Project". The page content includes:

**Message:**

- Congratulations! You got the least privilege role.

**Permissions of role roles/viewer:**

- accessapproval.requests.get
- accessapproval.requests.list
- accessapproval.serviceAccounts.get
- accessapproval.settings.get
- accesscontextmanager.accessLevels.get
- accesscontextmanager.accessLevels.list
- accesscontextmanager.accessPolicies.get
- accesscontextmanager.accessPolicies.getIamPolicy
- accesscontextmanager.accessPolicies.list
- accesscontextmanager.accessZones.get
- accesscontextmanager.accessZones.list
- accesscontextmanager.authorizedOrgsDescs.get
- accesscontextmanager.authorizedOrgsDescs.list
- accesscontextmanager.gcpUserAccessBindings.get
- accesscontextmanager.gcpUserAccessBindings.list
- accesscontextmanager.policies.get
- accesscontextmanager.policies.getIamPolicy
- accesscontextmanager.policies.list
- accesscontextmanager.servicePerimeters.get
- accesscontextmanager.servicePerimeters.list
- actions.agent.get
- actions.agentVersions.get
- actions.agentVersions.list
- advisorynotifications.notifications.get
- advisorynotifications.notifications.list
- apiplatform.annotationSpecs.get
- apiplatform.annotationSpecs.list
- apiplatform.annotations.get
- apiplatform.annotations.list
- apiplatform.artifacts.get
- apiplatform.artifacts.list
- apiplatform.batchPredictionJobs.get
- apiplatform.batchPredictionJobs.list
- apiplatform.contexts.get

## Level 2

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Check Privileges pd1 PredefinedRole-Storage". The page content includes:

- A nonce value: **nonce: 311054399499**
- A **Message:** "Congratulations! You got the least privilege role."
- A list of **Permissions of role roles/storage.objectViewer:**
  1. resourcemanager.projects.get
  2. resourcemanager.projects.list
  3. storage.objects.get
  4. storage.objects.list
- A sidebar on the right with the text: **odin id: shbhat@pdx.edu**

## Level 3

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Check Privileges pd2 PredefinedRole-Compute". The page content includes:

nonce: 597732097034

**Message:**

- Congratulations! You got the least privilege role.

**Permissions of role roles/compute.viewer:**

- compute.acceleratorTypes.get
- compute.acceleratorTypes.list
- compute.addresses.get
- compute.addresses.list
- compute.autoscalers.get
- compute.autoscalers.list
- compute.backendBuckets.get
- compute.backendBuckets.getIamPolicy
- compute.backendBuckets.list
- compute.backendServices.get
- compute.backendServices.getIamPolicy
- compute.backendServices.list
- compute.commitments.get
- compute.commitments.list
- compute.diskTypes.get
- compute.diskTypes.list
- compute.disks.get
- compute.disks.getIamPolicy
- compute.disks.list
- compute.disks.listEffectiveTags
- compute.disks.listTagBindings
- compute.externalVpnGateways.get
- compute.externalVpnGateways.list
- compute.firewallPolicies.get
- compute.firewallPolicies.getIamPolicy
- compute.firewallPolicies.list
- compute.firewalls.get
- compute.firewalls.list
- compute.forwardingRules.get
- compute.forwardingRules.list
- compute.globalAddresses.get
- compute.globalAddresses.list
- compute.globalForwardingRules.get
- compute.globalForwardingRules.list
- compute.globalForwardingRules.list

odin id: shbhat@pdx.edu

## Level 4

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Check Privileges pd3 PredefinedRole-Logging". The URL is "odin-ctf-shbhat.cloudfunctions.net". The browser's address bar also shows "IAM - IAM & Adm...". The user's email, "odin id: shbhat@pdx.edu", is visible in the top right corner.

**Message:**

- Congratulations! You got the least privilege role.

**Permissions of role roles/logging.viewer:**

1. logging.buckets.get
2. logging.buckets.list
3. logging.exclusions.get
4. logging.exclusions.list
5. logging.links.get
6. logging.links.list
7. logging.locations.get
8. logging.locations.list
9. logging.logEntries.list
10. logging.logMetrics.get
11. logging.logMetrics.list
12. logging.logServiceIndexes.list
13. logging.logServices.list
14. logging.logs.list
15. logging.operations.get
16. logging.operations.list
17. logging.queries.create
18. logging.queries.delete
19. logging.queries.get
20. logging.queries.list
21. logging.queries.listShared
22. logging.queries.update
23. logging.sinks.get
24. logging.sinks.list
25. logging.usage.get
26. logging.views.get
27. logging.views.list
28. resourcemanager.projects.get

## Level 5

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Check Privileges pd4 PredefinedRole-Datastore". The URL is "ud-ctf-shbhat.cloudfunctions.net". The page content includes:

**Message:**

- Congratulations! You got the least privilege role.

**Permissions of role roles/datastore.viewer:**

1. appengine.applications.get
2. datastore.databases.get
3. datastore.databases.getMetadata
4. datastore.databases.list
5. datastore.entities.get
6. datastore.entities.list
7. datastore.indexes.get
8. datastore.indexes.list
9. datastore.namespaces.get
10. datastore.namespaces.list
11. datastore.statistics.get
12. datastore.statistics.list
13. resourcemanager.projects.get
14. resourcemanager.projects.list

In the top right corner of the browser window, there is a message: "odin id: shbhat@pdx.edu".

## Level 6

Worked on this later after looking at slack discussion, so screenshot is taken from Linux mint instead of macOS

The screenshot shows a Mozilla Firefox browser window with multiple tabs open. The active tab is titled "Check Privileges - pd5 PredefinedRole-Vision — Mozilla Firefox" and displays the URL <https://us-central1-cloud-ctf-shbhat.cloudfunctions.net/pd5-f-check?nonce=794971734756>. The page content includes:

- Message:**
  - Congratulations! You got the least privilege role.
- Permissions of role roles/datasource.user:**
  1. appengine.applications.get
  2. datastore.databases.get
  3. datastore.databases.getMetadata
  4. datastore.databases.list
  5. datastore.entities.allocateIds
  6. datastore.entities.create
  7. datastore.entities.delete
  8. datastore.entities.get
  9. datastore.entities.list
  10. datastore.entities.update
  11. datastore.indexes.list
  12. datastore.namespaces.get
  13. datastore.namespaces.list
  14. datastore.statistics.get
  15. datastore.statistics.list
  16. resourcemanager.projects.get
  17. resourcemanager.projects.list
- Permissions of role roles/storage.admin:**
  1. firebase.projects.get
  2. orgpolicy.policy.get
  3. recommender.iamPolicyInsights.get
  4. recommender.iamPolicyInsights.list
  5. recommender.iamPolicyInsights.update
  6. recommender.iamPolicyRecommendations.get
  7. recommender.iamPolicyRecommendations.list
  8. recommender.iamPolicyRecommendations.update
  9. resourcemanager.projects.get
  10. resourcemanager.projects.list
  11. storage.buckets.create
  12. storage.buckets.createTagBinding

The browser status bar at the bottom shows various icons and the time 4:59 PM.

## Level 7

The screenshot shows a web browser window with the following details:

- Tab Bar:** Roles – IAM..., Privileges – ..., Compute En..., IAM roles for..., shbhat.cloudflare.net, 05.tg: Stora..., Privilege-Th..., New chat.
- Title Bar:** Check Privileges ct1 CustomRole-Project
- Content Area:**
  - Nonce:** 961287895760
  - Message:**
    - Congratulations! You get the least privileges.
  - Permissions of custom role projects/cloud-ctf-shbhat/roles/ct1\_access\_role\_961287895760:**
    - compute.instances.list
    - storage.buckets.list
- Right Panel:** odin id: shbhat@pdx.edu

## Level 8

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Check Privileges ct2 CustomRole-Storage". Below the title, it says "nonce: 582474359637". A teal-colored message box contains the following text:

**Message:**

- Congratulations! You get the least privileges.

**Permissions of custom role projects/cloud-ctf-shbhat/roles/ct2\_access\_role\_582474359637:**

1. storage.objects.list

In the top right corner of the browser window, there is a dark sidebar with the text "odin id: shbhat@pdx.edu".

## Level 9

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Check Privileges ct3 CustomRole-Compute". The URL is "shbhat.cloudfunctions.net". The page content includes:

**Message:**

- Congratulations! You get the least privileges.

**Permissions of custom role projects/cloud-ctf-shbhat/roles/ct3\_access\_role\_629023615224:**

1. compute.instances.list

In the top right corner of the browser window, there is a sidebar with the text "odin id: shbhat@pdx.edu".

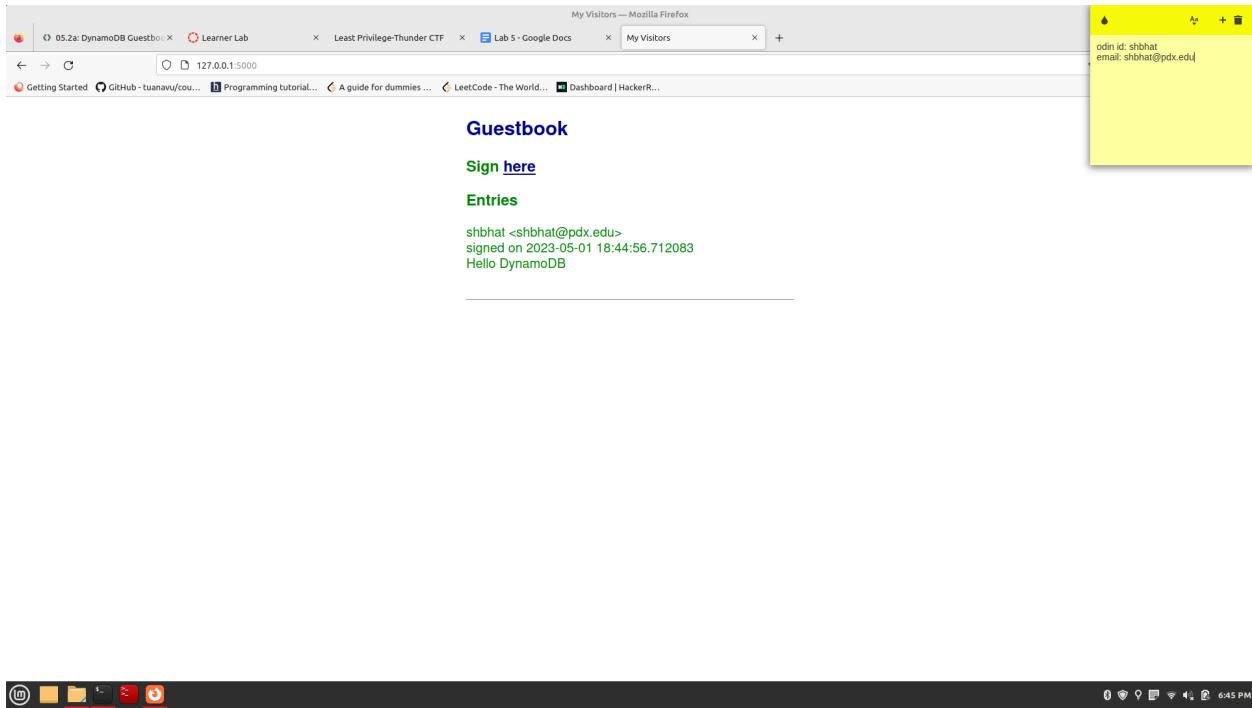
## Level 10

The screenshot shows a web browser window with the following details:

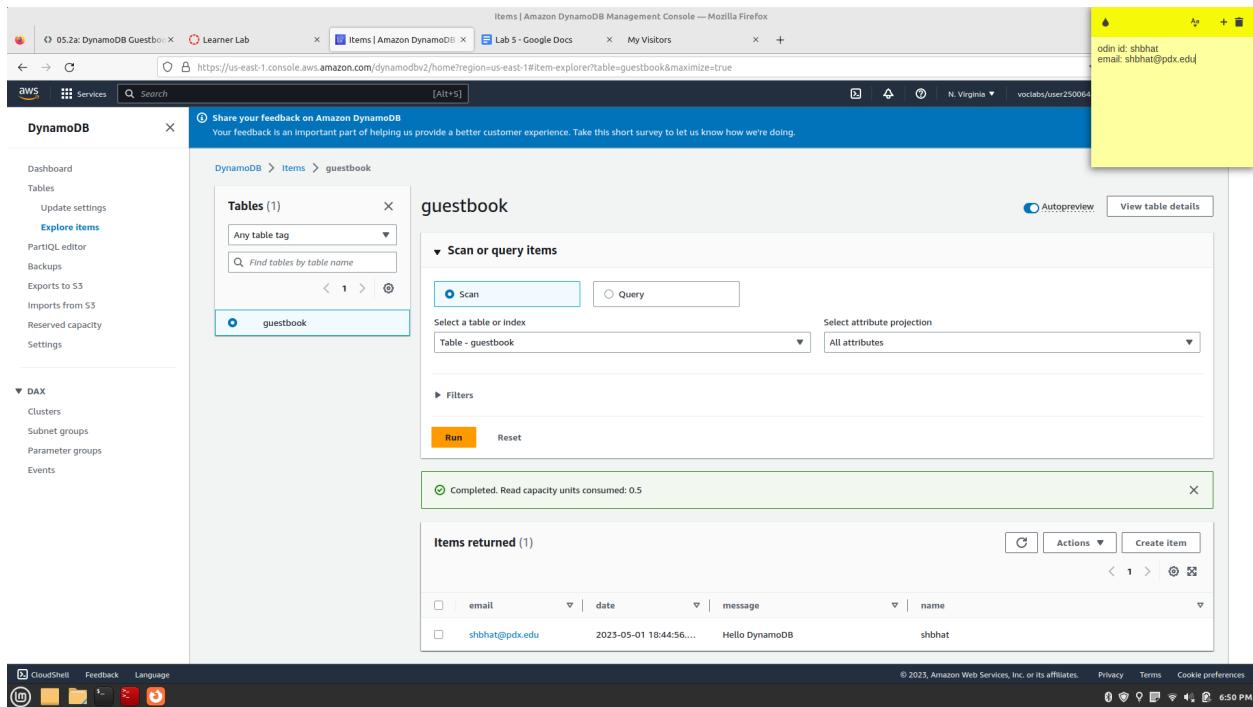
- Title Bar:** Roles – IAM & A..., Privileges - ct4..., Access control..., shbhat.cloudfunctions.net, 05.1g: Storage, I..., Privilege-Thund...
- Nonce:** nonce: 364479487913
- Content:**
  - Message:** Congratulations! You get the least privileges.
  - Permissions of custom role projects/cloud-ctf-shbhat/roles/ct4\_access\_role\_364479487913:**
    1. logging.logEntries.list
- User Information:** odin id: shbhat@pdx.edu

# Section 5.2a DynamoDB Guestbook

## 5.2a.1. Take a screenshot of the output for your lab notebook.

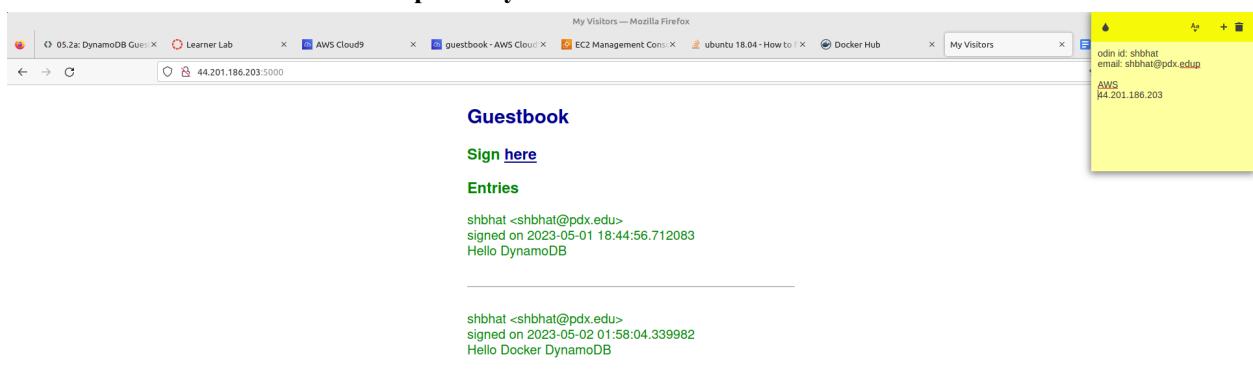


5.2a.2 Click on the "Items" tab and view the entry you have just added to your DynamoDB table.



The screenshot shows the AWS Management Console for Amazon DynamoDB. On the left, the navigation pane includes 'Dashboard', 'Tables' (selected), 'Explore items', 'PartiQL editor', 'Backups', 'Exports to S3', 'Imports from S3', 'Reserved capacity', and 'Settings'. Under 'Tables', there's a 'DAX' section with 'Clusters', 'Subnet groups', 'Parameter groups', and 'Events'. The main area shows a 'Tables (1)' list with 'Any table tag' dropdown and a search bar. One table, 'guestbook', is selected. The 'Scan or query items' section has 'Scan' selected, 'Table - guestbook' chosen for projection, and a green status bar indicating 'Completed. Read capacity units consumed: 0.5'. The 'Items returned (1)' table lists one item: shbhat@pdx.edu, 2023-05-01 18:44:56..., Hello DynamoDB, shbhat. A yellow sticky note on the right side of the screen highlights the table item.

5.2a.3 Take a screenshot of the output for your lab notebook.



The screenshot shows a web browser window titled 'My Visitors — Mozilla Firefox' with the URL '44.201.186.203:5000'. The page displays a 'Guestbook' with the heading 'Sign here'. Below it, under 'Entries', are two entries:

email	date	message	name
shbhat@pdx.edu	2023-05-01 18:44:56...	Hello DynamoDB	shbhat

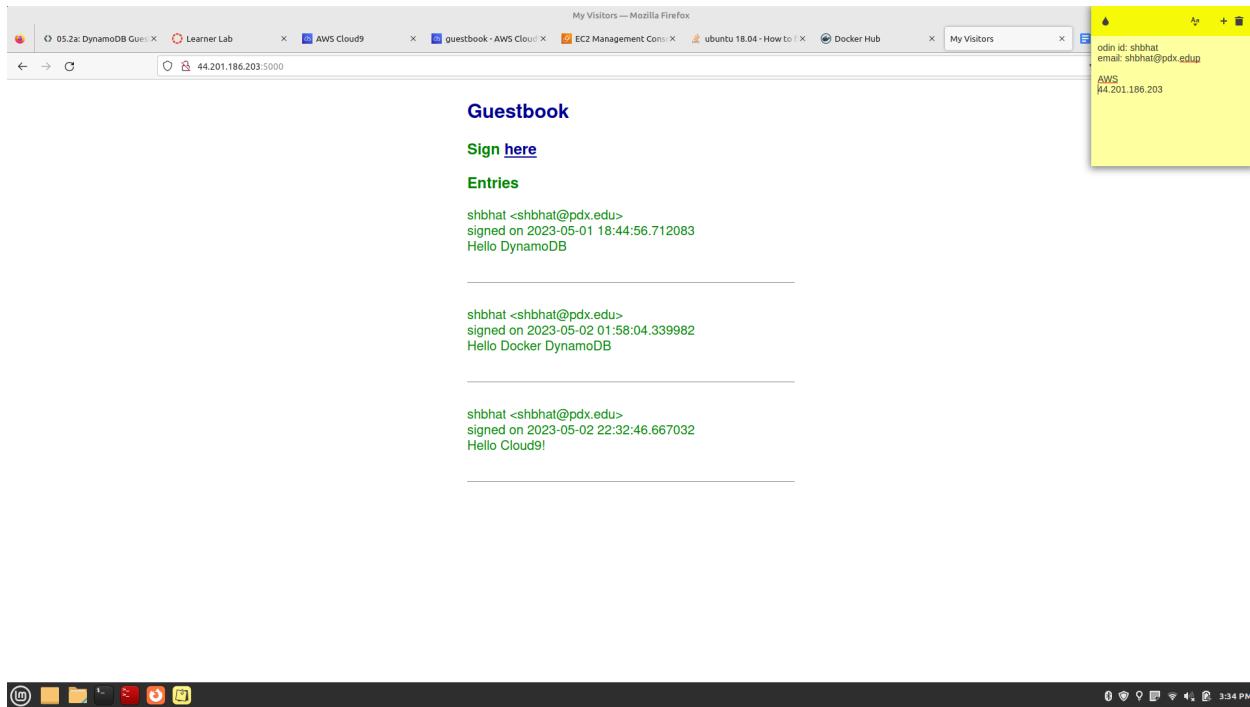
A yellow sticky note on the right side of the screen highlights the second entry.

The screenshot shows the Amazon DynamoDB Management Console interface. On the left, the navigation pane includes 'Dashboard', 'Tables', 'Update settings', 'Explore items' (which is selected), 'PartiQL editor', 'Backups', 'Exports to S3', 'Imports from S3', 'Reserved capacity', and 'Settings'. Under 'DAX', there are 'Clusters', 'Subnet groups', 'Parameter groups', and 'Events'. The main area displays a table named 'guestbook' with two items. The first item has an email of 'shbhat@pdx.edu', a date of '2023-05-01 18:44:56...', a message of 'Hello DynamoDB', and a name of 'shbhat'. The second item has an email of 'shbhat@pdx.edu', a date of '2023-05-02 01:58:04...', a message of 'Hello Docker DynamoDB', and a name of 'shbhat'. The status bar at the bottom indicates 'Completed. Read capacity units consumed: 0.5'.

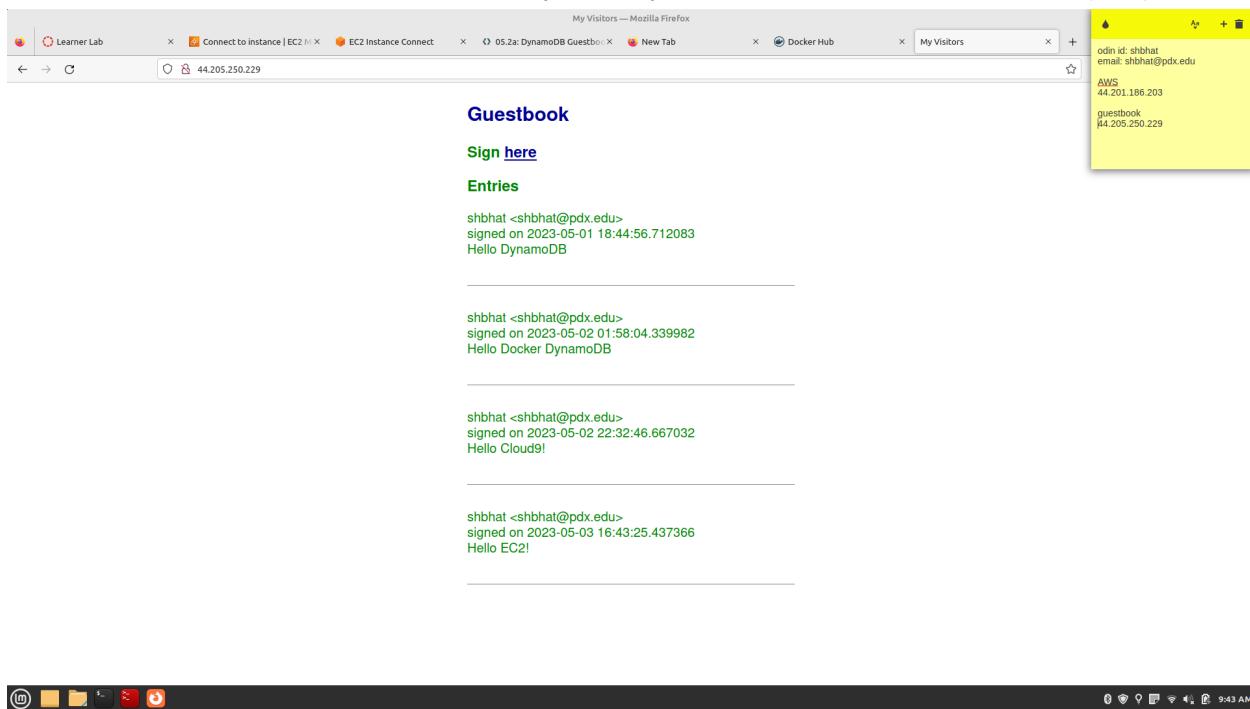
#### 5.2a.4 Take a screenshot of the container image on DockerHub.

The screenshot shows the Docker Hub repository page for 'shbhat21/aws\_gb'. The top navigation bar includes links for 'Explore', 'Repositories', 'Organizations', 'Help', and a user profile for 'shbhat21'. Below the navigation, there are tabs for 'General', 'Tags', 'Builds', 'Collaborators', 'Webhooks', and 'Settings'. The 'Tags' tab is selected, showing a single tag named 'latest'. A note states 'Last pushed a few seconds ago by shbhat21'. Below this, it shows the digest '12bb855e42f' and the OS/ARCH 'linux/amd64'. To the right, there is a button labeled 'docker pull shbhat21/aws\_gb:latest' with a download icon. The status bar at the bottom indicates 'Using 0 of 1 private repositories. Get more'.

**5.2a.5 Take a screenshot as before that shows your entry and the IP address in the URL bar. (cloud9)**



**5.2a.6 Take a screenshot as before that shows your entry and the IP address in the URL bar. (EC2)**



**5.2a.7 Take a screenshot that shows all of the guestbook entries that you added to the DynamoDB table including their timestamps.**

The screenshot shows the Amazon DynamoDB Management Console interface. On the left, the navigation pane is open, showing the 'DynamoDB' section with options like 'Tables', 'Explore Items', and 'Item Explorer'. The 'Tables' section shows one table named 'guestbook'. The main area is titled 'Scan or query items' and has a 'Scan' button selected. Below it, there's a table projection dropdown set to 'All attributes'. The results section is titled 'Items returned (4)' and displays the following data:

	email	date	message	name
1	shbhat@pdx.edu	2023-05-01 18:44:56.712083	Hello DynamoDB	shbhat
2	shbhat@pdx.edu	2023-05-02 01:58:04.339982	Hello Docker DynamoDB	shbhat
3	shbhat@pdx.edu	2023-05-02 22:32:46.667052	Hello Cloud9!	shbhat
4	shbhat@pdx.edu	2023-05-03 16:43:25.437366	Hello EC2!	shbhat

A yellow callout box highlights the top right corner of the interface, containing the following information:

```
odin id: shbhat  
email: shbhat@pdx.edu  
AWS  
44.201.186.203  
voclabs/user25064  
Autopreview  
guessbook  
44.205.250.229
```

# Section 5.2G Cloud Datastore Guestbook

## 5.2g.1 Take a screenshot of the output for your lab notebook.

The screenshot displays two main windows. The top window is a web browser showing a 'Guestbook' page with a single entry from 'shbhat <shbhat@pdx.edu>' signed on May 1, 2023, at 19:35:40. The entry text is 'Hello Datastore'. The bottom window is a terminal session titled '(cloud-shrikrishna-shbhat)' showing the creation of a new Cloud Datastore entity named 'Review' with the key 'id=5634161670881280' and the value 'Hello Datastore'. The terminal also shows the path to the guestbook key file: '/cloud-shrikrishna-shbhat/.iam.gserviceaccount.com/guestbook/x599/guestbook-key.json'.

```
silv36ns0290wcd40xwA\TDL15674249f0E1XDW57w\9A11a0ctyBLcF4Fx2NgTyLyJ111kB\kaO+R81\naSwbzUxmB0zhd2u4ts/s/x03JH3Yry8zWm04rAuVr1e9/9b0elFLewkBqgQCEv+nZSpTvkRkgaaTpL22Ndgypg9+QghaIDt24WL9h3BsmMp0w6GJTF=IyQb3J9c\n8+0MuVjP613415whnWrrYY4J4Ct\WycVgB771MbaChg5hACAEVwkJx2x5vno7W/ZbdN2z+Dc4f1kMnSSYejcaup510eU57UTfQKbgDyru3oVtesjaEQ711S\nncFK/DPbds5PKQ4ec6vgf8rNjPhntI+hatIx1Rw1rxfab5nLtAB/dvAurm/n818u98xtFutWts+fG111Jd97s9XvrU0MXPt4+tLbwS2eJ0+A/ZCAbL2K0WhQIHNf-nHKvhb/dTCM95/gPRBz\nv---.EN PRIVATE KEY----.vn\n-----END PRIVATE KEY-----\n\"client_id\": \"114587534023252957816\",\n\"auth_uri\": \"https://accounts.google.com/o/oauth2/auth\",\n\"token_uri\": \"https://oauth2.googleapis.com/token\",\n\"auth_provider_x509_cert_url\": \"https://www.googleapis.com/oauth2/v1/certs\",\n\"client_x509_cert_url\": \"https://www.googleapis.com/robot/v1/metadata/x599/guestbook%40cloud-shrikrishna-shbhat.iam.gserviceaccount.com\"\nshbhat@cloudshell:~ (cloud-shrikrishna-shbhat)$ cat guestbook-key.json []
```

## 5.2g.2 Take a screenshot of the output for your lab notebook.

**Guestbook**

[Sign here](#)

**Entries**

shbhat <shbhat@pdx.edu>  
signed on 2023-05-01 19:35:40.465330+00:00  
Hello Datastore

---

shbhat <shbhat@pdx.edu>  
signed on 2023-05-02 02:46:38.944829+00:00  
Hello Docker Datastore!

Entities - Datastore - cloud-Shrkrishna-shbhat - Google Cloud console - Mozilla Firefox

Google Cloud

Cloud Firestore in Datastore mode

Entities

Kind: Review

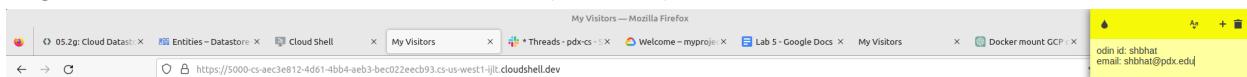
Name/ID	Date	Email	Message	Name
id=5634161670881280	May 1, 2023 at 12:35:40.465 PM UTC-7	shbhat@pdx.edu	Hello Datastore	shbhat
id=5644004762845184	May 1, 2023 at 7:46:38.944 UTC-7	shbhat@pdx.edu	Hello Docker Datastore!	shbhat

CLOUD SHELL (cloud-shrkrishna-shbhat) + \*

```
shbhat@cloudshell: ~ (cloud-shrkrishna-shbhat) $ cat guestbook-key.json
{
  "client_email": "115875340232297816",
  "auth_url": "https://accounts.google.com/o/oauth2/auth",
  "token_url": "https://accounts.google.com/o/oauth2/token",
  "mechanism_order": "cert",
  "cert": {
    "url": "https://www.googleapis.com/oauth2/v1/certs",
    "client_x509_cert_url": "https://www.googleapis.com/oauth2/v1/metadata/x509/guestbook%40cloud-shrkrishna-shbhat.iam.gserviceaccount.com"
  }
}
shbhat@cloudshell: ~ (cloud-shrkrishna-shbhat) $ cat guestbook-key.json

```

### 5.2g.3 Take a screenshot as before that shows your entry and the URL bar.



A screenshot of the Google Cloud Console Datastore interface. The URL in the address bar is https://console.cloud.google.com/datastore/databases/\_default/entities;kind=Review;ns=\_DEFAULTS\_/query?kind=Review&authUser=1&cloudshell=false&project=cloud-shrirkishna-shbhat. The interface shows a "Datastore" section with tabs for "Entities", "CREATE ENTITY", and "DELETE". On the left, there are sections for "Database", "Indexes", "Import/Export", "Time-to-live (TTL)", "Admin", "Insights", "Dashboard", and "Key Visualizer". The main area is titled "Query results" and shows a table with four rows of data. The columns are "Name/ID", "date", "email", "message", and "name". The data is as follows:

Name/ID	date	email	message	name
id:5632499082330112	May 1, 2023 at 8:01:08.312 PM UTC-7	shbhat@pdx.edu	Hello Cloud Shell!	shbhat
id:5634161670881280	May 1, 2023 at 12:35:40.465 PM UTC-7	shbhat@pdx.edu	Hello Datastore	shbhat
id:5644004762845184	May 1, 2023 at 7:46:38.944 PM UTC-7	shbhat@pdx.edu	Hello Docker Datastore!	shbhat

A yellow sticky note is overlaid on the top right of the browser window, containing the text "odin id: shbhat" and "email: shbhat@pdx.edu".

**5.2g.4 Take a screenshot as before that shows your entry and the IP address in the URL bar.**

My Visitors — Mozilla Firefox  
← → ⌛ 35.247.58.55

**Guestbook**

[Sign here](#)

**Entries**

shbhat <shbhat@pdx.edu>  
signed on 2023-05-02 03:01:08.312046+00:00  
Hello Cloud Shell!

---

shbhat <shbhat@pdx.edu>  
signed on 2023-05-01 19:35:40.465330+00:00  
Hello Datastore

---

shbhat <shbhat@pdx.edu>  
signed on 2023-05-02 02:46:38.944829+00:00  
Hello Docker Datastore!

---

shbhat <shbhat@pdx.edu>  
signed on 2023-05-02 03:10:38.153055+00:00  
Hello Compute Engine!

---



**5.2g.5 Take a screenshot of all of the entries that have been added including their timestamps for your lab notebook.**

Entities - Datastore - cloud-Shrikrishna-s... - Google Cloud console — Mozilla Firefox  
← → ⌛ https://console.cloud.google.com/datastore/databases/\_default/\_entities?kind=My%20Visitors=\_\$DEFAULTS\_=sortCol=date&sortDir=ASCENDING/query/kind=authUser=1&cloudShell=false&project=cloud-shrikrishna

Google Cloud cloud-Shrikrishna-shbhat Search (/) for resources, docs, products, and more Q Search

Cloud Firestore in Datastore mode

**Datastore**

**Entities** CREATE ENTITY DELETE

QUERY BY KIND QUERY BY GQL

RUN CLEAR DOCUMENTATION

Kind: Review

ADD TO QUERY ▾

**Query results**

	Name/ID	date	email	message	name
<input type="checkbox"/>	<a href="#">id=5634161670881280</a>	May 1, 2023 at 12:35:40.465 PM UTC-7	shbhat@pdx.edu	Hello Datastore	shbhat
<input type="checkbox"/>	<a href="#">id=5644004762845184</a>	May 1, 2023 at 7:46:38.944 PM UTC-7	shbhat@pdx.edu	Hello Docker Datastore!	shbhat
<input type="checkbox"/>	<a href="#">id=5632499082330112</a>	May 1, 2023 at 8:01:08.312 PM UTC-7	shbhat@pdx.edu	Hello Cloud Shell!	shbhat
<input type="checkbox"/>	<a href="#">id=5704568633556992</a>	May 1, 2023 at 8:10:38.153 PM UTC-7	shbhat@pdx.edu	Hello Compute Engine!	shbhat

Release Notes

8:12 PM