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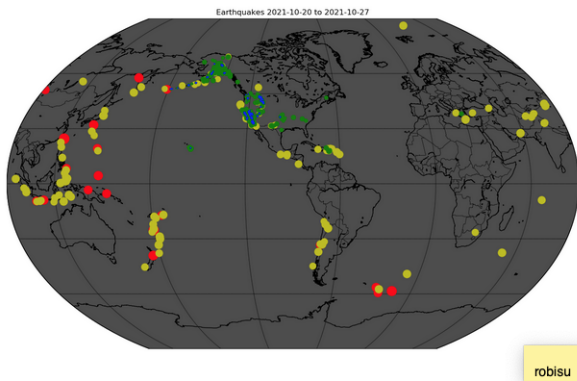
GCP Cloud Storage #1 (USGS)

- *What roles are attached to the Compute Engine default service account?*
 - **The default account has the 'Editor' role attached.**
- *Would they be sufficient for the VM to perform its functions?*
 - **They should be sufficient, as the Editor role has permissions to alter most resources for most GCP services.**
- *What permissions are given by the default access scope to Cloud Storage?*
 - **For Cloud Storage, default access gives only read only access.**
- *Would they be sufficient for the VM to perform its functions?*
 - No, if we want the VM to be able to create storage buckets and write things to them, we need to expand its permissions from this default access level.

USGS Data

- *What time did the latest earthquake happen?*
 - **10/27/2021, 22:49:07.043Z**
- *What was the magnitude (mag)?*
 - **Magnitude: 1.5**
- *Where was the place it happened?*
 - **14 km West of Fishhook, Alaska**

earthquake.png in storage bucket



GCP Storage #2

- What is the exact error message that is returned?

```
robisu@robisu-storage2:~$ gcloud compute instances list
ERROR: (gcloud.compute.instances.list) Some requests did not succeed:
- Required 'compute.instances.list' permission for 'projects/cloud-f21-robin-su-robisu'
```

-
- “Required ‘compute.instances.list’ permission for ‘projects/cloud-f21-robin-su-robisu’”

Permission added to list instances with the gcloud command:

```
robisu@robisu-storage2:~$ gcloud compute instances list
NAME                                ZONE          MACHINE_TYPE  PREEMPTIBLE  INTERNAL_IP  EXTERNAL_IP  STATUS
robisu-storage1                    us-west1-b    f1-micro      10.138.0.11
robisu-storage2                    us-west1-b    f1-micro      10.138.0.12  34.145
robisu-storage2-5.39               us-west1-b    f1-micro      10.138.0.12  34.145  RUNNING
```

- 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?
 - The role is ‘Compute Viewer’, to gain read only access to information about Compute Engine resources, including instances.

- What is the exact error message that is returned?

```
robisu@robisu-storage2:~$ gsutil cp moonquakes.png gs://earthquake_data_bucket/
Copying file://moonquakes.png [Content-Type=image/png]...
/ [0 files][ 0.0 B/312.4 KiB]
AccessDeniedException: 403 gcs-lab@cloud-f21-robin-su-robisu.iam.gserviceaccount.com does not have storage.objects.create access to the Google Cloud Storage object.
```

“gcs-lab...gserviceaccount.com does not have storage.objects.create access to the Google Cloud Storage object.”

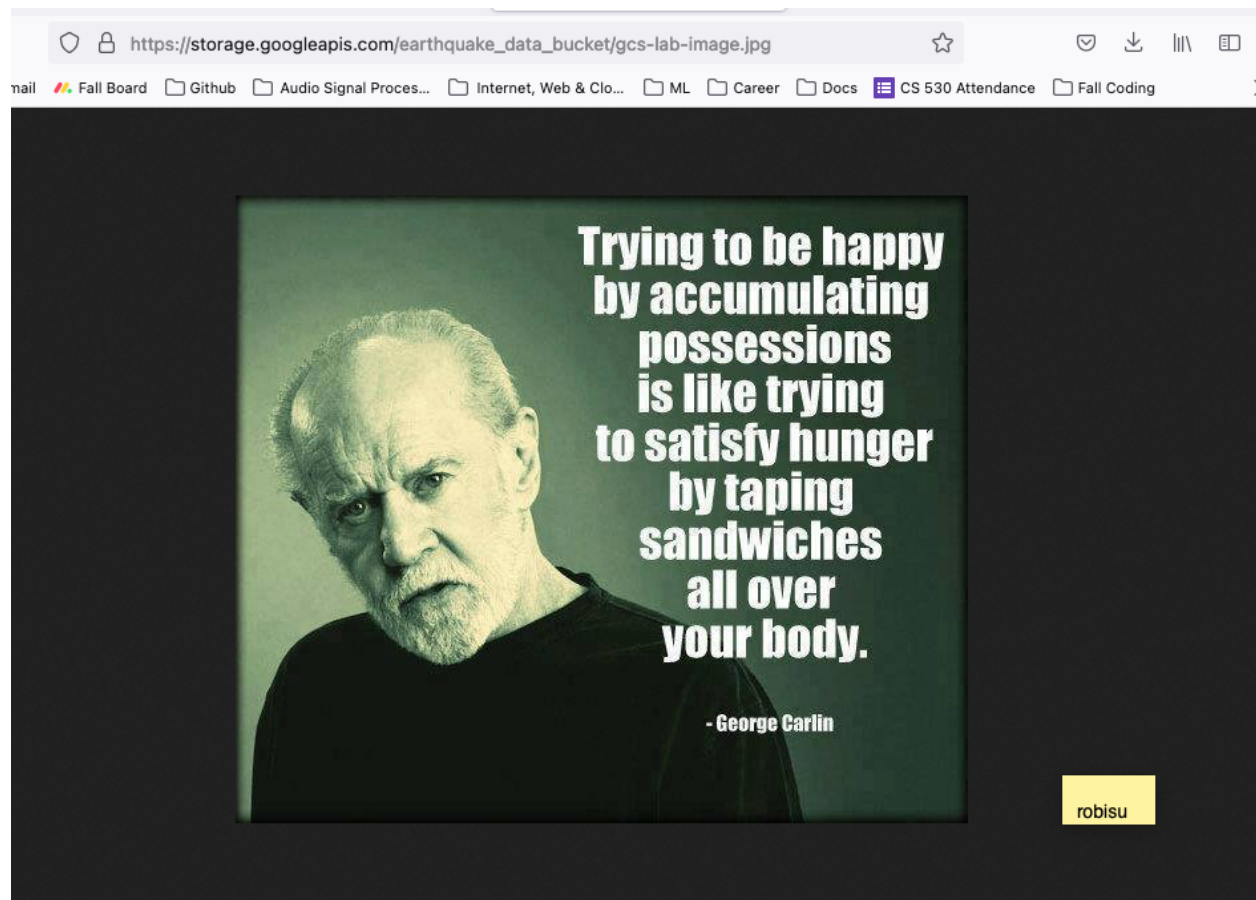
```
robisu@robisu-storage2:~$ gsutil cp moonquakes.png gs://earthquake_data_bucket/
Copying file://moonquakes.png [Content-Type=image/png]...
/ [0 files][ 0.0 B/312.4 KiB]
/ [1 files][312.4 KiB/312.4 KiB]

Operation completed over 1 objects/312.4 KiB.
```

- 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** - allows the role full control in creating, updating, and deleting storage object resources.

GCP Storage #3

Public storage bucket URL and image:



IAM and Least Privileges #4

https://us-central1-cloud-f21-robin-su-robisu.cloudfunctions.net/scores-f-318247655084

Least Privileges - Score

nonce: 318247655084

User: robisu

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	10 / 10
CustomRole-Project	10 / 10
CustomRole-Storage	10 / 10
CustomRole-Compute	10 / 10
CustomRole-Logging	10 / 10
CustomRole-Vision	10 / 10
Sum / Total	115 / 110

DynamoDB #1

Local app, DynamoDB database backend

localhost:5000

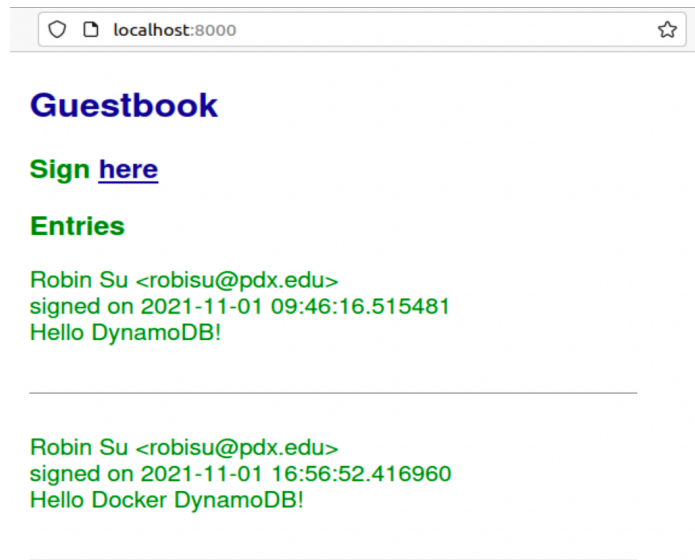
Guestbook

[Sign here](#)

Entries

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 09:46:16.515481
Hello DynamoDB!

DynamoDB / Docker #2



DynamoDB / Cloud9 #3

Guestbook

Sign [here](#)

Entries

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 09:46:16.515481
Hello DynamoDB!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 16:56:52.416960
Hello Docker DynamoDB!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 17:14:02.520862
Hello Cloud9!

DynamoDB / EC2 #4

ec2-3-82-200-112.compute-1.amazonaws.com

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Guestbook

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Entries

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 09:46:16.515481
Hello DynamoDB!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 16:56:52.416960
Hello Docker DynamoDB!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 17:14:02.520862
Hello Cloud9!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 17:31:50.297167
Hello EC2!

Item in DynamoDB Interface:

Items info Autopreview

Tables (1) ×

Tag
Any table tag
Find tables by name

guestbook

▼ guestbook View table details

Scan Query

Table or index
guestbook

Filters

Run Reset

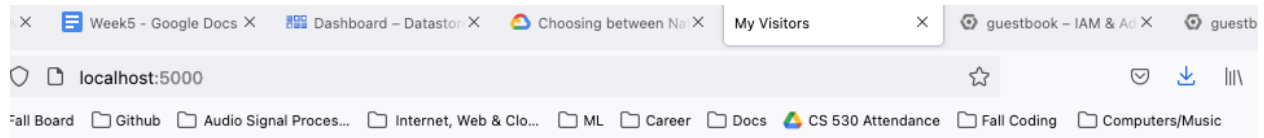
Completed Read capacity units consumed: 0.5

Items returned (4) Actions Create item

< 1 > ⚙

<input type="checkbox"/>	email	date	message	name
<input type="checkbox"/>	robisu@pdx...	2021-11-01 09:46:16.515481	Hello DynamoDB!	Robin Su
<input type="checkbox"/>	robisu@pdx...	2021-11-01 16:56:52.416960	Hello Docker DynamoDB!	Robin Su
<input type="checkbox"/>	robisu@pdx...	2021-11-01 17:14:02.520862	Hello Cloud9!	Robin Su
<input type="checkbox"/>	robisu@pdx...	2021-11-01 17:31:50.297167	Hello EC2!	Robin Su

Cloud Datastore #1



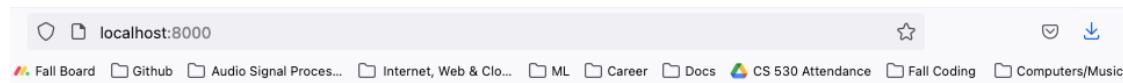
Guestbook

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Entries

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 11:40:54.466521+00:00
Hello Datastore!

Cloud Datastore #2



Guestbook

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Entries

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 11:40:54.466521+00:00
Hello Datastore!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 18:48:47.850947+00:00
Hello Docker Datastore!

Image on DockerHub:

The screenshot shows the DockerHub interface for the repository 'gcp_gb' by user 'robinjsu'. The 'Tags' tab is selected, showing a list of image tags. The 'latest' tag is highlighted, with a digest of '588290cd52c7', OS/ARCH of 'linux/amd64', and a compressed size of '1.08 GB'. The last pull was 'a few seconds ago'. A 'docker pull robinjsu/gcp_gb:latest' command is shown with a copy icon. An 'Advanced Image Management' section at the top offers tools to clean up unused content, available with Pro, Team, and Business subscriptions. A 'Delete' button is visible for the selected tag.

TAG	DIGEST	OS/ARCH	LAST PULL	COMPRESSED SIZE
latest	588290cd52c7	linux/amd64	a few seconds ago	1.08 GB

Cloud Datastore #3

The screenshot shows a web browser window with the URL 'https://5000-cs-889035549482-default.cs-us-west1-ijlt.cloudshell.dev'. The browser's address bar and tabs are visible. The page content includes a 'Guestbook' title, a 'Sign here' link, and a section titled 'Entries'. There are three entries, each signed by 'Robin Su <robinu@pdx.edu>' on different dates in 2021. The entries are: 'Hello Datastore!', 'Hello Cloud Shell!', and 'Hello Docker Datastore!'.

Guestbook

[Sign here](#)

Entries

Robin Su <robinu@pdx.edu>
signed on 2021-11-01 11:40:54.466521+00:00
Hello Datastore!

Robin Su <robinu@pdx.edu>
signed on 2021-11-01 19:16:14.843261+00:00
Hello Cloud Shell!

Robin Su <robinu@pdx.edu>
signed on 2021-11-01 18:48:47.850947+00:00
Hello Docker Datastore!

Cloud Datastore #4

34.127.66.254

all Fall Board Github Audio Signal Proces... Internet, Web & Clo... ML Career Docs CS 530 Attendance Fall Coding Compute

Guestbook

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Entries

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 11:40:54.466521+00:00
Hello Datastore!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 19:16:14.843261+00:00
Hello Cloud Shell!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 18:48:47.850947+00:00
Hello Docker Datastore!

Robin Su <robisu@pdx.edu>
signed on 2021-11-01 19:26:47.559153+00:00
Hello Compute Engine!

Entries in the Datastore UI:

<input type="checkbox"/>	Name/ID ↑	date	email	message	name
<input type="checkbox"/>	id=5632499082330112	2021-11-01 (04:40:54.466) PDT	robisu@pdx.edu	Hello Datastore!	Robin Su
<input type="checkbox"/>	id=5636645067948032	2021-11-01 (12:16:14.843) PDT	robisu@pdx.edu	Hello Cloud Shell!	Robin Su
<input type="checkbox"/>	id=5642368648740864	2021-11-01 (11:48:47.850) PDT	robisu@pdx.edu	Hello Docker Datastore!	Robin Su
<input type="checkbox"/>	id=5646488461901824	2021-11-01 (12:26:47.559) PDT	robisu@pdx.edu	Hello Compute Engine!	Robin Su