

06.1a: EB Guestbook

6.1a.3. Running the application

- Take a screenshot showing it has been brought up successfully

6.1a.4. Handling failures seamlessly

- Take a screenshot of the replacement VM being started.

6.1a.7. Deploying the Guestbook

- Take a screenshot of the Guestbook including the URL with the entry in it.
- Take a screenshot of them.

06.1g: App Engine Guestbook

6.1g.3. Deploying the Guestbook

- Take a screenshot of the output that includes the URL in the address bar for your lab notebook.

4. Handling failures seamlessly

- Take a screenshot of them.

06.2g: Cloud Run, Secret Manager (Web proxy)

6.2g.8. Setup secret proxy

- Take a screenshot of the proxy and its results including the URL containing your OdinID
- What is the security advantage of passing in the secret proxy route as an environment variable?

6.2g.10. Cloud Build

- Take a screenshot of the image in the registry that shows the size of the container for your lab notebook.

6.2g.11. Deploy to Cloud Run

- Take a screenshot of it that includes the proxy URL for your lab notebook.
- Take a screenshot of the error page that includes the proxy URL for your lab notebook.

6.2g.13. Deploy to Cloud Run with Secret Manager

- Take a screenshot of it that includes the proxy URL for your lab notebook.
- Identify the vulnerability in your lab notebook that Google has prevented.

06.3a: ECS Guestbook

6.3a.1. Prepare a container image

Show that your image was uploaded to your account on Docker Hub.

6.3a.5. Examine the service

- Take a screenshot of the DNS name of the guestbook-lb load balancer for your lab notebook

6.3a.6. Visit the site

- Take a screenshot of the Guestbook app running in a browser that includes the DNS name of the site.

06.3g: Cloud Run Guestbook

6.3g.2. Prepare a container image

- Take a screenshot that includes the output of the command and the time it took to execute.
- Take a screenshot showing the container image and its virtual size

6.3g.4. View the Guestbook

- Take a screenshot that includes the URL Cloud Run has created for your site.
- What port do container instances listen on?
- What are the maximum number of instances Cloud Run will autoscale up to for your service?

06.4g: Cloud Functions, PubSub

6.4g.4. -

- After downloading the file from the bucket, where is it stored?
- What class in the ImageMagick package is used to do the blurring of the file?
- What lines of code perform the blurring of the image and its storage back into the filesystem?

6.4g.7. Test function

- Take a screenshot of the blurred image in the output bucket for your lab notebook
- Include a screenshot of the output logs that show that the above image was blurred.

6.4g.11. PubSub via CLI

- Why are there no items returned?

6.4g.12. -

Perform in Cloud Shell

- What is the messageId of the published message?

Perform in VM

- Take a screenshot of the output of the successful pull that includes the message and its messageId.

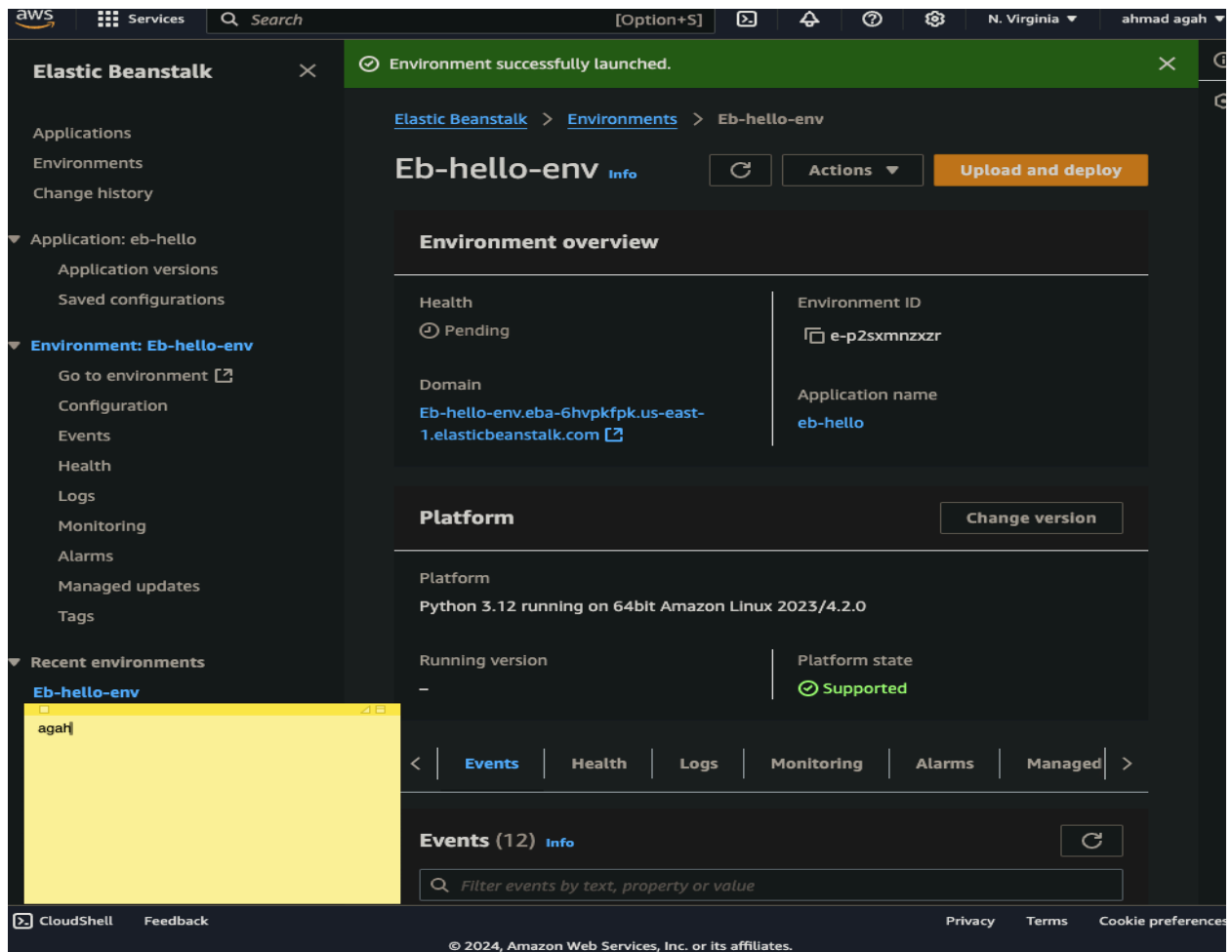
6.4g.15. Test programs and clean up

- Take a screenshot showing the messageIds and messages sent
- Take a screenshot showing the same messageIds and messages received

06.1a: EB Guestbook

6.1a.3. Running the application

- Take a screenshot showing it has been brought up successfully



6.1a.4. Handling failures seamlessly

- Take a screenshot of the replacement VM being started.

Find instance by attribute or tag (click to filter)

All states

< 1 > ⚙

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type
<input type="checkbox"/>	Eb-hello-env	I-0fb734c0977b2f034	Terminated	t3.small
<input type="checkbox"/>	Eb-hello-env	I-0cbb1fad81037a451	Running	t3.small
<input type="checkbox"/>	Eb-hello-env	I-05276eec3f516ecfe	Running	t3.small
<input type="checkbox"/>		I-0d27df49ec22775a8	Terminated	t2.small
<input type="checkbox"/>		I-09bab1fdbfd3959d	Running	t2.small

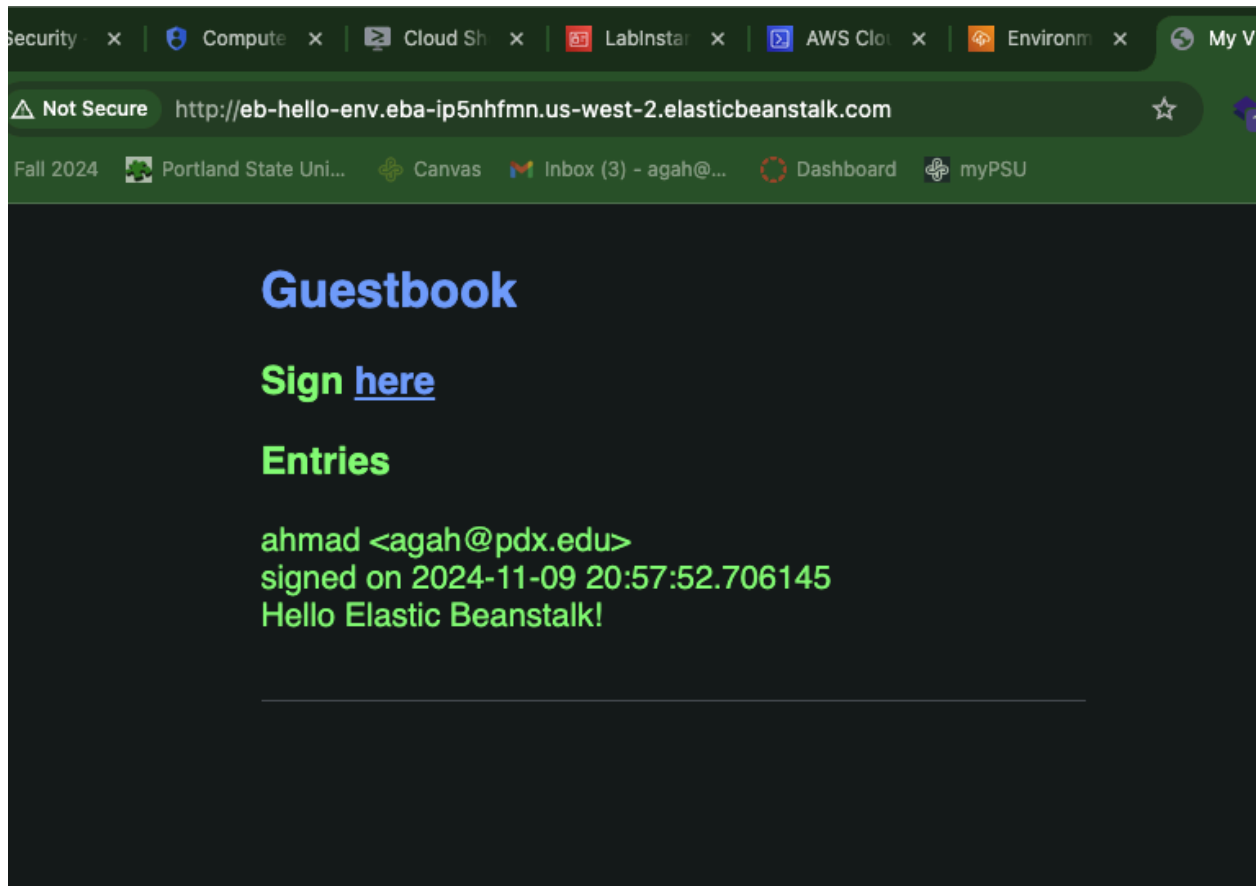
Select an instance

⚙ | ✕

agaH

6.1a.7. Deploying the Guestbook

- Take a screenshot of the Guestbook including the URL with the entry in it.



- Take a screenshot of them.

arch [Option+S] [Icons] Oregon ahmad agah

Instances (3) [Info](#)

Last updated less than a minute ago [Refresh](#) [Connect](#) [Instance state](#) [Actions](#)

[Launch instances](#)

[All states](#)

[Instance state = running](#) [Clear filters](#) < 1 > [Settings](#)

<input type="checkbox"/>	Name Edit	Instance ID	Instance state	Instance type	Status checks
<input type="checkbox"/>	Eb-hello-env	i-027adb3c755dd9f8	Running Refresh Stop	t3.micro	3/3 checks passed
<input type="checkbox"/>		i-06ed0941299373b55	Running Refresh Stop	t2.small	2/2 checks passed
<input type="checkbox"/>	Eb-hello-env	i-01991b76bcda52b7b	Running Refresh Stop	t3.micro	3/3 checks passed

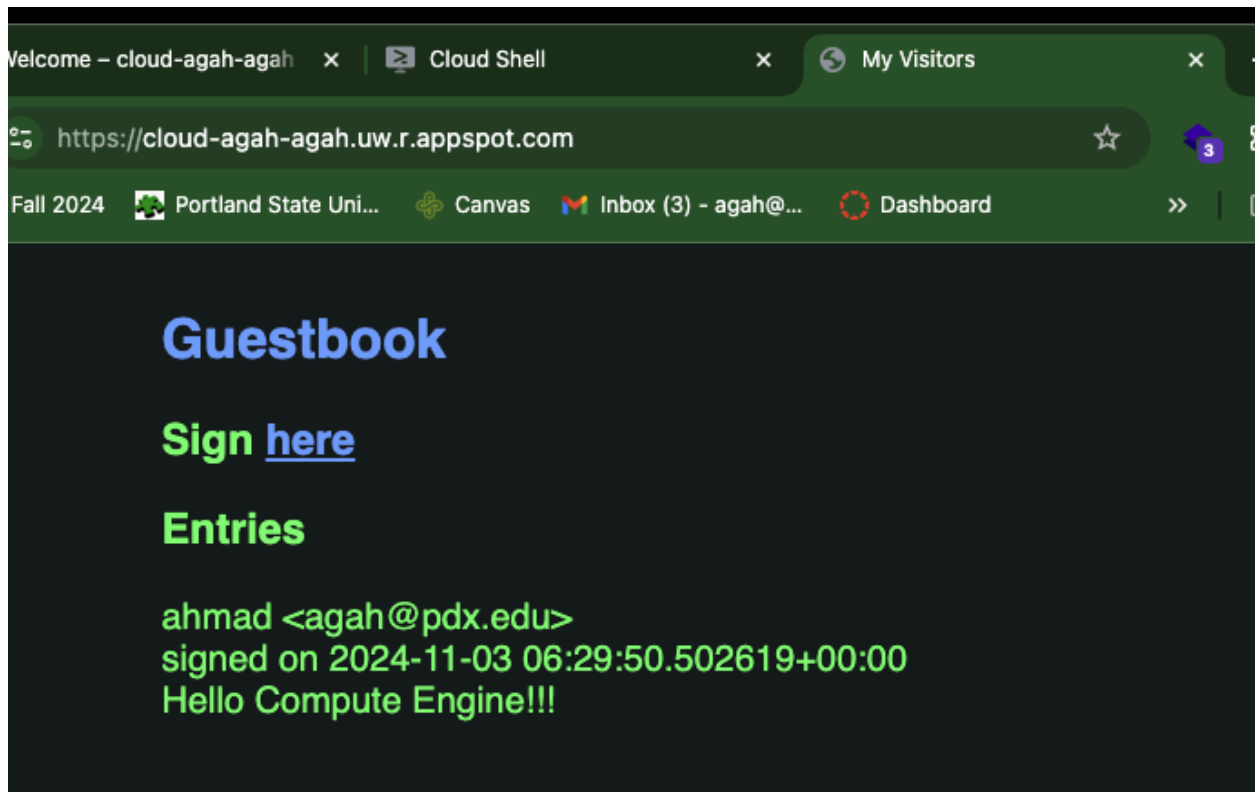
agah

Select an instance [Settings](#) [Close](#)

06.1g: App Engine Guestbook

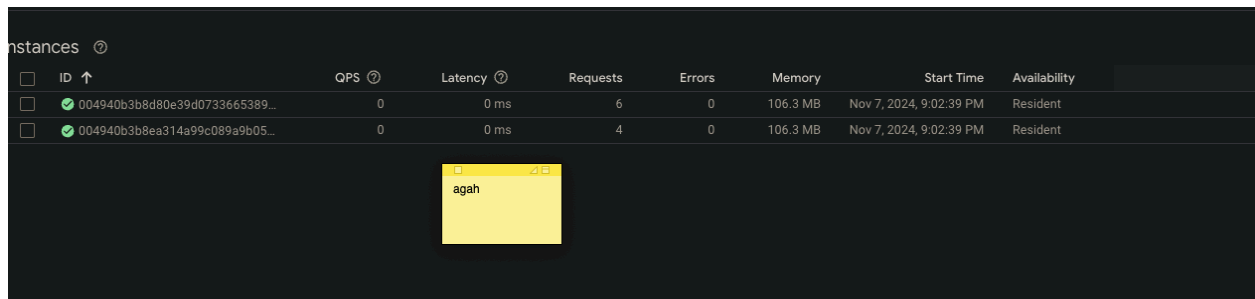
6.1g.3. Deploying the Guestbook

- Take a screenshot of the output that includes the URL in the address bar for your lab notebook.



4. Handling failures seamlessly

- Take a screenshot of them.



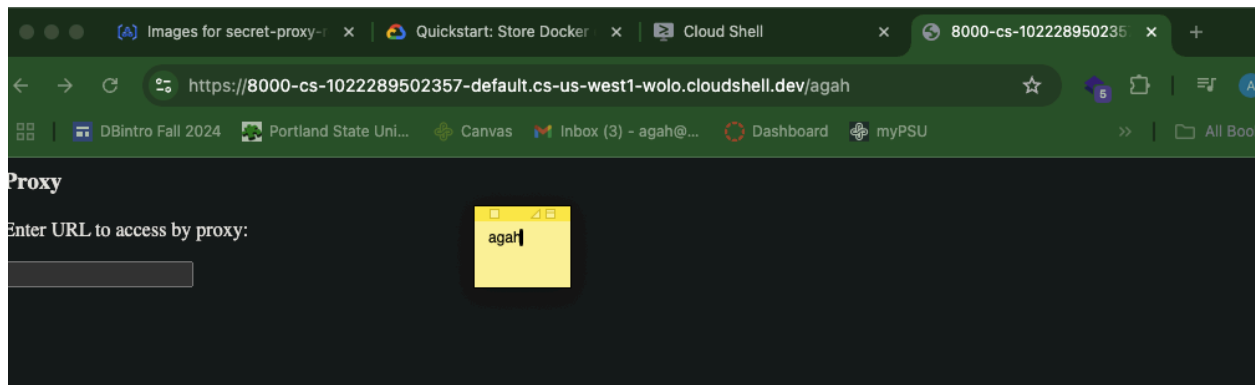
A screenshot of the Cloud Run instances table. The table has columns for ID, QPS, Latency, Requests, Errors, Memory, Start Time, and Availability. Two instances are listed, both with a green status icon. A yellow sticky note with the text 'agah' is placed over the bottom part of the table.

ID	QPS	Latency	Requests	Errors	Memory	Start Time	Availability
004940b3b8d80e39d0733665389...	0	0 ms	6	0	106.3 MB	Nov 7, 2024, 9:02:39 PM	Resident
004940b3b8ea314a99c089a9b05...	0	0 ms	4	0	106.3 MB	Nov 7, 2024, 9:02:39 PM	Resident

06.2g: Cloud Run, Secret Manager (Web proxy)

6.2g.8. Setup secret proxy

- Take a screenshot of the proxy and its results including the URL containing your OdinID

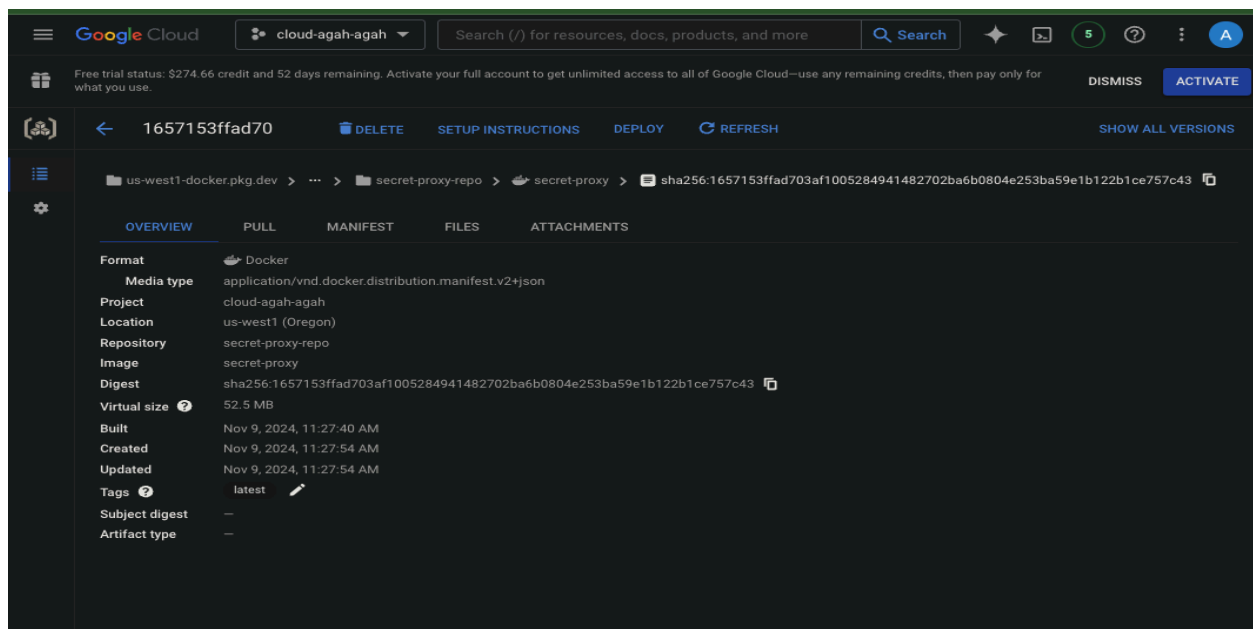


- What is the security advantage of passing in the secret proxy route as an environment variable?

Using environment variables for the secret proxy route enhances security by keeping sensitive information out of the source code, reducing the risk of exposure in version control. It allows dynamic configuration across different environments without code changes and hides sensitive data from end-users, minimizing the attack surface.

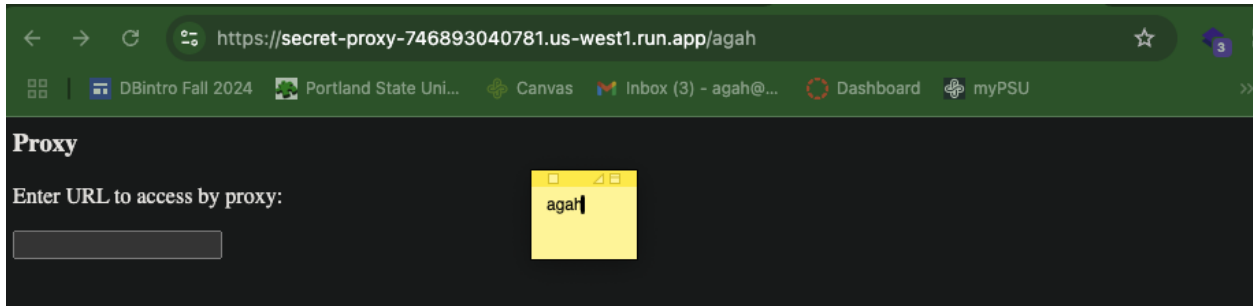
6.2g.10. Cloud Build

- Take a screenshot of the image in the registry that shows the size of the container for your lab notebook.

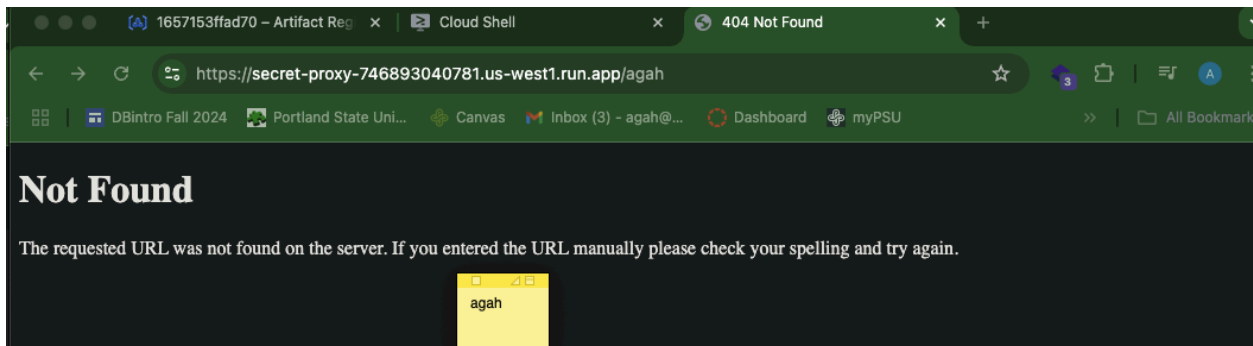


6.2g11. Deploy to Cloud Run

- Take a screenshot of it that includes the proxy URL for your lab notebook.

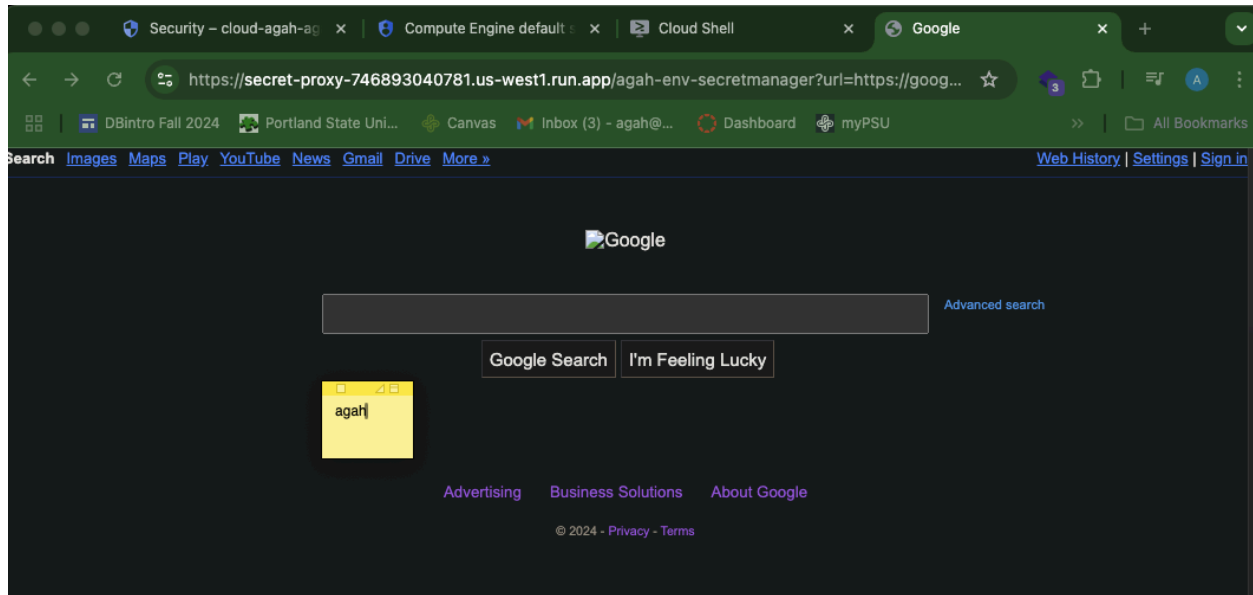


- Take a screenshot of the error page that includes the proxy URL for your lab notebook.



6.2g.13. Deploy to Cloud Run with Secret Manager

- Take a screenshot of it that includes the proxy URL for your lab notebook.



- Identify the vulnerability in your lab notebook that Google has prevented.

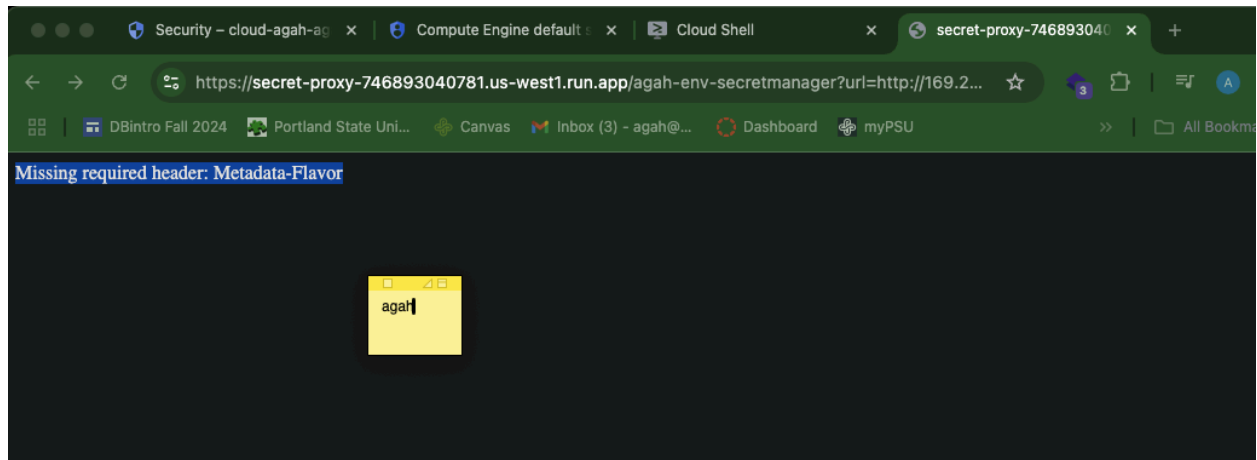
Vulnerability Prevented: Server-Side Request Forgery (SSRF)

Google Cloud prevents Server-Side Request Forgery (SSRF) attacks by requiring the **Metadata-Flavor: Google** header for any request to its metadata server (`http://169.254.169.254/computeMetadata`). This header acts as a security measure, ensuring that only legitimate requests access metadata information.

Impact of SSRF:

- Unauthorized access to internal services or metadata.
- Potential exposure of sensitive data, such as instance credentials.

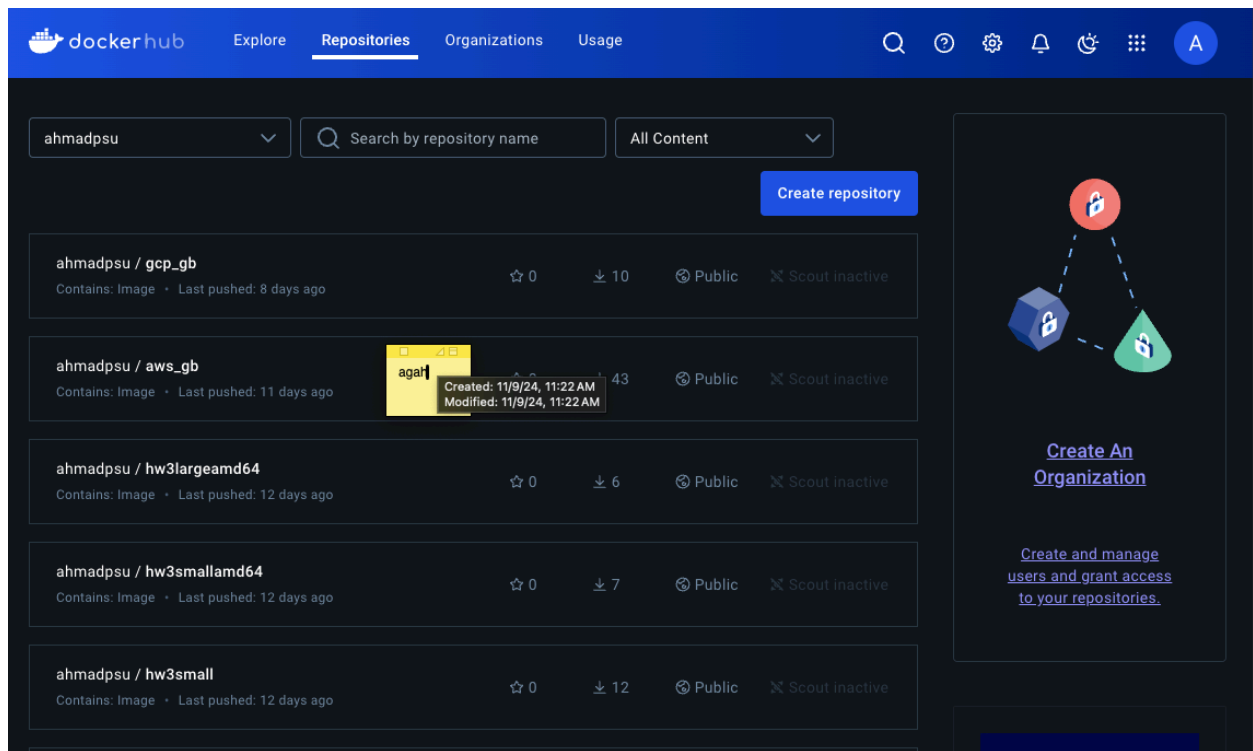
Google's Prevention Mechanism: By rejecting requests without the **Metadata-Flavor** header, Google blocks unauthorized attempts to access the metadata server, protecting cloud environments from credential theft and internal service exploitation.



06.3a: ECS Guestbook

6.3a.1. Prepare a container image

Show that your image was uploaded to your account on [Docker Hub](#).



6.3a.5. Examine the service

- Take a screenshot of the DNS name of the guestbook-lb load balancer for your lab notebook

https://us-west-2.console.aws.amazon.com/ec2/home?region=us-west-2#LoadBalancer:loa...

search [Option+S] Oregon ahmad agah

EC2 > Load balancers > guestbook-lb

guestbook-lb

Details

Load balancer type Application	Status Active	VPC vpc-03b0a03a98e256e37	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z1H1FLSHABSF5	Availability Zones subnet-0efbf3ac7443a9927 us-west-2d (usw2-az4) subnet-00ad84689e05545d7 us-west-2c (usw2-az3) subnet-06fb59d20ae69b4b2 us-west-2a (usw2-az1) subnet-0d1b97027d8feb240 us-west-2b (usw2-az2)	Date created November 11, 2024, 11:43 (UTC-08:00)
Load balancer ARN arn:aws:elasticloadbalancing:us-west-2:762233733461:loadbalancer/app/guestbook-lb/75f58cb0185fbf1a		DNS name Info guestbook-lb-1330279521.us-west-2.elb.amazonaws.com (A Record)	

Listeners and rules | Network mapping | Resource map - new | Security | Monitoring | Integrations | Attributes

Listeners and rules (1) Info

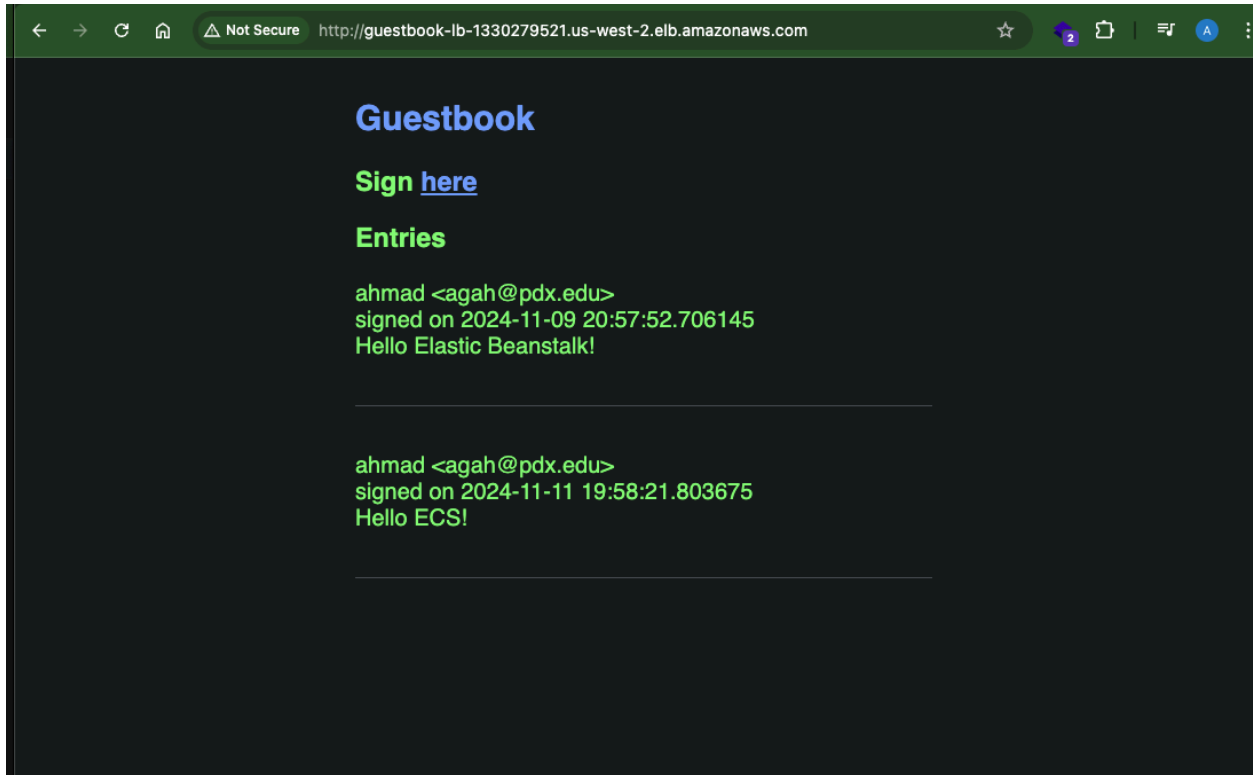
A listener checks for connection requests on its configured protocol and port. Traffic received by the listener is routed according to the default action and any additional rules.

Filter listeners

Protocol:Port	Default action	Rules	ARN	Security policy
HTTP:80	Forward to target group <ul style="list-style-type: none"> guestbook-group: 1 (100%) Target group stickiness: Off 	1 rule	ARN	Not applicable

6.3a.6. Visit the site

- Take a screenshot of the Guestbook app running in a browser that includes the DNS name of the site.



06.3g: Cloud Run Guestbook

6.3g.2. Prepare a container image

- Take a screenshot that includes the output of the command and the time it took to execute.

The screenshot displays the Google Cloud Build 'Build details' page for a successful build. The build ID is 4af51f96-de9f-46e1-879b-a3ac3a50bab8, started on Nov 9, 2024, at 11:27:23 AM. The source is a Google Storage link. The build summary table shows two steps: 'Build Su...' (00:00:32) and '0: gcr.io/cl...' (00:00:11). The build log shows the process of removing an intermediate container, building a new image, and pushing it to a repository.

Step	Duration
✓ Build Su... 1 Step	00:00:32
✓ 0: gcr.io/cl... build --netw...	00:00:11

Build Summary

Build log Execution details Build artifacts

☐ Wrap lines ☐ Show newest entries first

```
91 ---- Running in 92e53284fb84
92 Removing intermediate container 92e53284fb84
93 ----> adb7a1ae27f4
94 Successfully built adb7a1ae27f4
95 Successfully tagged us-west1-docker.pkg.dev/cloud-agah-agah/secret-proxy-repo/s
96 PUSH
97 Pushing us-west1-docker.pkg.dev/cloud-agah-agah/secret-proxy-repo/secret-proxy
98 The push refers to repository [us-west1-docker.pkg.dev/cloud-agah-agah/secret-p
99 b725c72442bd: Preparing
100 98b927cf178c: Preparing
101 aa223cd851d4: Preparing
102 796a04bf70eb: Preparing
103 eb70195b3e7f: Preparing
104 98b5f35ea9d3: Preparing
105 98b5f35ea9d3: Waiting
106 98b927cf178c: Pushed
107 aa223cd851d4: Pushed
108 eb70195b3e7f: Pushed
```

- Take a screenshot showing the container image and its virtual size

The screenshot shows the 'Repositories' page in Google Cloud Container Registry. It lists two repositories: 'guestbook-repo' and 'secret-proxy-repo'. The 'secret-proxy-repo' is highlighted, showing it is a Docker repository, Standard type, located in us-west1 (Oregon), with a size of 52.5 MB.

Name	Format	Type	Location	Description	Labels	Version policy	Encryption	Encryption key	Immutable image tags	Created	Updated	Size
guestbook-repo	Docker	Standard	us-west1 (Oregon)			—	Google-managed	—	False	4 minutes ago	4 minutes ago	231.5 MB
secret-proxy-repo	Docker	Standard	us-west1 (Oregon)			—	Google-managed	—	False	10 hours ago	10 hours ago	52.5 MB

6.3g.4. View the Guestbook

- Take a screenshot that includes the URL Cloud Run has created for your site.

[Sign here](#)

Entries

ahmad <agah@pdx.edu>
signed on 2024-11-03 06:29:50.502619+00:00
Hello Compute Engine!!!

ahmad <agah@pdx.edu>
signed on 2024-11-03 05:53:51.099980+00:00
Hello Cloud Shell!

ahmad <agah@pdx.edu>
signed on 2024-11-03 04:53:40.249821+00:00
Hello Datastore

ahmad <agah@pdx.edu>
signed on 2024-11-08 05:03:41.202080+00:00
Hello App Engine!

ahmad <agah>
signed on 2024-11-03 05:13:01.000080+00:00
hello Docker Datastore!

ahmad <agah@pdx.edu>
signed on 2024-11-10 06:26:08.345651+00:00
Hello Cloud Run!

- What port do container instances listen on?

Port: The container instances listen on port 8080.

- What are the maximum number of instances Cloud Run will autoscale up to for your service?

Maximum Number of Instances: Cloud Run will autoscale up to 100 instances for your service.

06.4g: Cloud Functions, PubSub

6.4g.4. -

- After downloading the file from the bucket, where is it stored?

The file is stored temporarily in the local filesystem of the environment running the Cloud Function.

`tempfile.mkstemp()` creates a temporary file on the local filesystem and returns its path (`temp_local_filename`).

`current_blob.download_to_filename(temp_local_filename)` downloads the image from the **Google Cloud Storage bucket** and saves it to the specified temporary file.

- What class in the ImageMagick package is used to do the blurring of the file?

The `Image` class from the **Wand library** (Python bindings for **ImageMagick**) is used to perform the blurring of the image. This class is responsible for handling image manipulations such as resizing, blurring, and saving images.

- What lines of code perform the blurring of the image and its storage back into the filesystem?

```
with Image(filename=temp_local_filename) as image:  
    image.resize(*image.size, blur=16, filter="hamming")  
    image.save(filename=temp_local_filename)
```

Image(filename=temp_local_filename): Loads the image from the local file into the **Image** object.

image.resize(*image.size, blur=16, filter="hamming"): Resizes the image with its current size and applies a blur effect with a strength of 16. The **filter="hamming"** is used for resizing, but in this context, the blur parameter is the main effect.

image.save(filename=temp_local_filename): Saves the blurred image back to the same temporary file.

This line uploads the modified (blurred) image from the local file system to the specified **Google Cloud Storage bucket**.

```
new_blob.upload_from_filename(temp_local_filename)
```

6.4g.7. Test function

- Take a screenshot of the blurred image in the output bucket for your lab notebook

The screenshot shows the Google Cloud console interface for a bucket named 'ahmadpsuout'. The top navigation bar includes the Google Cloud logo, a project selector set to 'cloud-agah-agah', and a search bar. A trial status banner at the top indicates a \$274.66 credit and 51 days remaining. The left sidebar contains navigation icons for various services. The main content area is titled 'Bucket details' and includes tabs for 'OBJECTS', 'CONFIGURATION', 'PERMISSIONS', 'PROTECTION', 'LIFECYCLE', 'OBSERVABILITY', and 'INVENTORY REPORT'. The 'OBJECTS' tab is selected, showing a 'Folder browser' on the left with a blurred image thumbnail labeled 'agah'. On the right, a table lists the objects in the bucket:

Name	Size	Type
zombie.jpg	71 KB	application/octet-stream

- Include a screenshot of the output logs that show that the above image was blurred.

```
agah@cloudshell:~/python-docs-samples/functions/v2/imagemagick (cloud-agah-agah)$ gcloud beta functions logs read python-blur-function --region=us-west1 --gen2 --limit=100
LEVEL:
NAME: python-blur-function
EXECUTION_ID:
TIME UTC: 2024-11-10 19:41:01.466
LOG: Blurred image uploaded to: gs://ahmadpsuout/zombie.jpg

LEVEL:
NAME: python-blur-function
EXECUTION_ID:
TIME UTC: 2024-11-10 19:41:01.095
LOG: Image zombie.jpg was blurred.

LEVEL:
NAME: python-blur-function
EXECUTION_ID:
TIME UTC: 2024-11-10 19:40:53.566
LOG: Image zombie.jpg was downloaded to /tmp/tmpvmg0bl_z.

LEVEL:
NAME: python-blur-function
EXECUTION_ID:
TIME UTC: 2024-11-10 19:40:53.450
LOG: The image zombie.jpg was detected as inappropriate.

LEVEL:
NAME: python-blur-function
EXECUTION_ID:
TIME UTC: 2024-11-10 19:40:53.017
LOG: Analyzing zombie.jpg.

LEVEL: I
NAME: python-blur-function
EXECUTION_ID:
TIME UTC: 2024-11-10 19:40:52.751
LOG:

LEVEL: I
NAME: python-blur-function
EXECUTION_ID:
TIME UTC: 2024-11-10 19:38:49.502
LOG: Default STARTUP TCP probe succeeded after 1 attempt for container "worker" on port 8080.
agah@cloudshell:~/python-docs-samples/functions/v2/imagemagick (cloud-agah-agah)$
```

6.4g11. PubSub via CLI

- Why are there no items returned?

In Google Cloud Pub/Sub, subscriptions only start receiving messages that are published after they are created. Any messages published before a subscription is created will not be delivered to that subscription, as they are not retroactive.

6.4g.12. -

Perform in Cloud Shell

- What is the messageid of the published message?

'12934964923621431'

Perform in VM

- Take a screenshot of the output of the successful pull that includes the message and its messageid.

```
12934964923621431
agah@pubsub:~$ gcloud pubsub subscriptions pull sub-${USER}

```

DATA	MESSAGE_ID	ORDERING_KEY	ATTRIBUTES	DELIVERY_ATTEMPT	ACK_ID
Message#2	12934964923621431				BhYsXUZIUTcZCGhRDk9eIz81IChFFwkCtwIoXXkwTTBBWH0HPg0Zcn1hdGNZEgZREFJ9DVgRDWJcTkQHsGdhvRXV0tbEQgBQVp4W1IZDm5eXXEEUCWw1LHtu-XONRs-fY_6q9ItLdGjibQ1ZiI9XhJLLD5-NTJFQV5AEkw-B0RJUytDCypYEU4EISE-MD5FU0RQ

```
agah@pubsub:~$
```


6.4g.15. Test programs and clean up

- Take a screenshot showing the messageIds and messages sent

```
(env) agah@cloudshell:~/pubsub (cloud-agah-agah)$ python3 publisher.py
Enter a message to send: hey
Published 12552135765307524 to topic projects/cloud-agah-agah/topics/my
_topic
Enter a message to send: how are you
Published 12934667755435023 to topic projects/cloud-agah-agah/topics/my
_topic
Enter a message to send: i miss you so much
Published 12553839660231166 to topic projects/cloud-agah-agah/topics/my
_topic
Enter a message to send: 
```

- Take a screenshot showing the same messageIds and messages received

```
(env) ahmadagah@pubsub:~$ vim subscriber.py
(env) ahmadagah@pubsub:~$ python3 subscriber.py
Received message 12552135765307524: 2024-11-10 21:09:48 (projects/cloud-aga
h-agah/topics/my_topic) : hey
Received message 12934667755435023: 2024-11-10 21:09:58 (projects/cloud-aga
h-agah/topics/my_topic) : how are you
Received message 12553839660231166: 2024-11-10 21:10:13 (projects/cloud-aga
h-agah/topics/my_topic) : i miss you so much
█
```