Lab 7 Notebook

## 7.1a

4. **Take a screenshot showing the completion of the command including its output.**

```
Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
  + ec2instance = (known after apply)

Do you want to perform these actions?
  Terraform will perform the actions described above.
  Only 'yes' will be accepted to approve.

  Enter a value: yes

aws_instance.guestbook: Creating...
aws_instance.guestbook: Still creating... [10s elapsed]
aws_instance.guestbook: Still creating... [20s elapsed]
aws_instance.guestbook: Still creating... [30s elapsed]
aws_instance.guestbook: Creation complete after 31s [id=i-0672ec70d4d171e80]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

ec2instance = "18.212.94.11"
[cloudshell-user@ip-10-6-84-190 tf]$ khod2
```

**Take a screenshot that includes the VM's IP addresses.**

| | N. Virginia ▼ | voclabs/user2807955=khod2@pdx.edu @ 1012-2514-1593 ▼ |
| --- | --- | --- |

| Connect | Instance state ▼ | Actions ▼ | Launch instances ▼ |
| --- | --- | --- | --- |

< 1 >

| Availability Zone ▽ | Public IPv4 DNS ▽ | Public IPv4 ... ▽ | Elastic IP |
| --- | --- | --- | --- |
| us-east-1d | ec2-18-212-94-11.com... | 18.212.94.11 | – |

6.  **Take a screenshot of the successful ssh login from Cloud Shell.**

```
[cloudshell-user@ip-10-6-84-190 tf]$ ssh ubuntu@54.90.251.33
Enter passphrase for key '/home/cloudshell-user/.ssh/id_ed25519':
Welcome to Ubuntu 20.04.5 LTS (GNU/Linux 5.15.0-1022-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Thu Nov  9 02:12:30 UTC 2023

  System load:  0.05               Processes:             105
  Usage of /:   20.0% of 7.57GB    Users logged in:       0
  Memory usage: 19%                IPv4 address for eth0: 172.31.21.160
  Swap usage:   0%


0 updates can be applied immediately.


The list of available updates is more than a week old.
To check for new updates run: sudo apt update
New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


Last login: Thu Nov  9 02:11:00 2023 from 3.235.230.50
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-21-160:~$ khod2
```
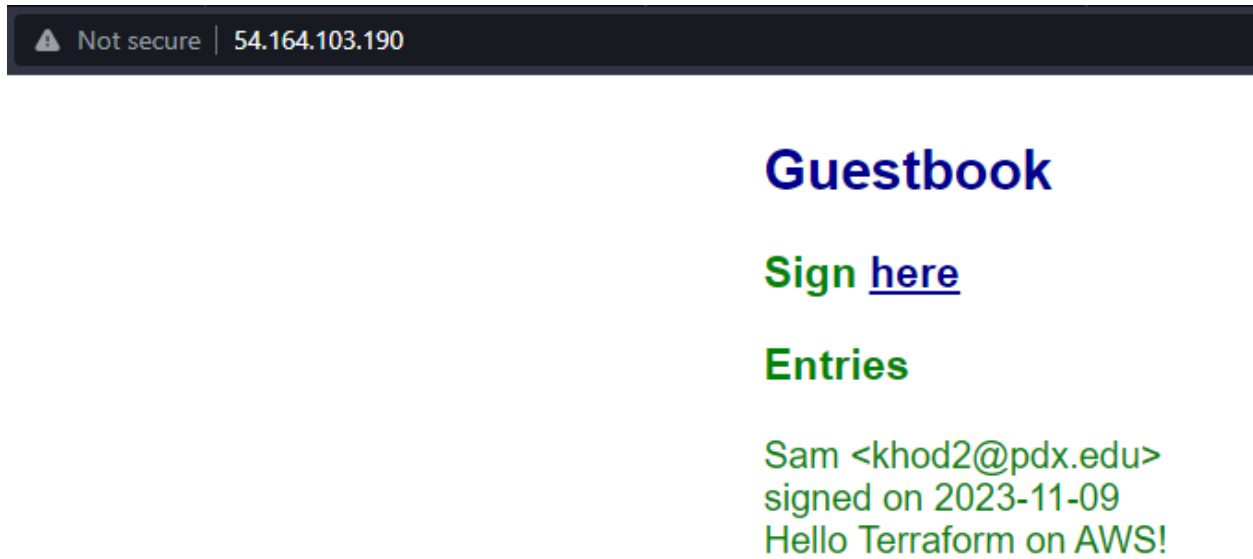
7.  **Take a screenshot of the output of the command that includes the IP address of the instance.**

```
Apply complete! Resources: 3 added, 0 changed, 0 destroyed.

Outputs:

ec2instance = "54.164.103.190"
[cloudshell-user@ip-10-6-84-190 tf]$ khod2
```
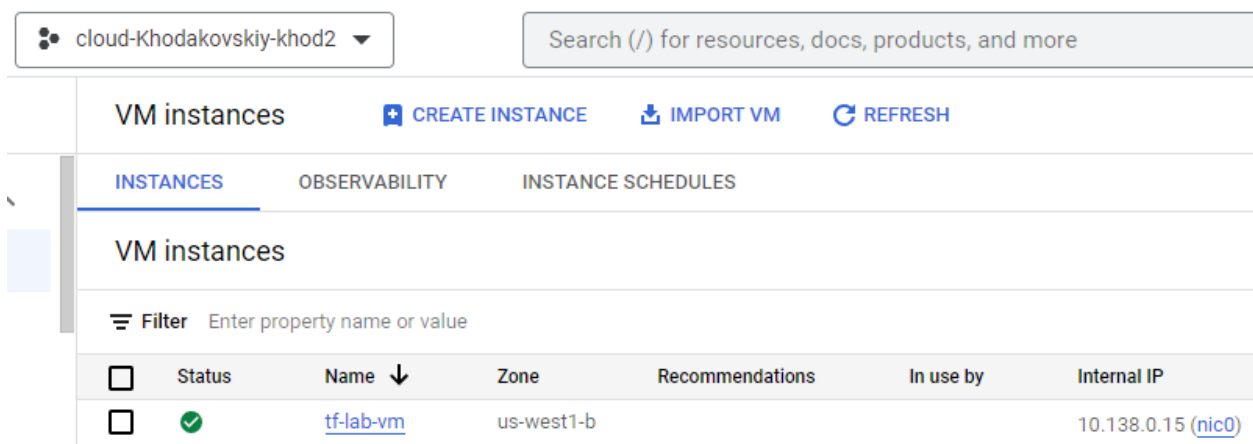
**8. Take a screenshot of the Guestbook including the URL with the entry in it.**

⚠ Not secure | 54.164.103.190

# Guestbook

## Sign here

## Entries

Sam <khod2@pdx.edu>
signed on 2023-11-09
Hello Terraform on AWS!

**7.1g**

**4. Take a screenshot that includes the VM's IP addresses.**

cloud-Khodakovskiy-khod2 ▼    Search (/) for resources, docs, products, and more

VM instances    ⊞ CREATE INSTANCE    ⬇ IMPORT VM    ↻ REFRESH

INSTANCES    OBSERVABILITY    INSTANCE SCHEDULES

VM instances

≡ Filter    Enter property name or value

| | Status | Name ↓ | Zone | Recommendations | In use by | Internal IP |
|---|---|---|---|---|---|---|
| ☐ | ✔ | tf-lab-vm | us-west1-b | | | 10.138.0.15 (nic0) |

5. **Take a screenshot showing the completion of the command including its output.**

```
google_compute_address.static: Creating...
google_compute_address.static: Still creating... [10s elapsed]
google_compute_address.static: Creation complete after 11s [id=projects/c]
google_compute_instance.default: Modifying... [id=projects/cloud-khodakovs
google_compute_instance.default: Still modifying... [id=projects/cloud-kho
google_compute_instance.default: Modifications complete after 11s [id=proj

Apply complete! Resources: 1 added, 1 changed, 0 destroyed.

Outputs:

ip = "34.168.55.43"
khod2@cloudshell:~/tf (cloud-khodakovskiy-khod2)$
```

**Take a screenshot that includes the VM's IP addresses.**

| | cloud-Khodakovskiy-khod2 ▼ | | Search (/) for resources, docs, products, and more | | | | Q |
|---|---|---|---|---|---|---|---|

VM instances    ✚ CREATE INSTANCE    ⬇ IMPORT VM    ⟳ REFRESH

INSTANCES    OBSERVABILITY    INSTANCE SCHEDULES

VM instances

≡ Filter    Enter property name or value

| | Status | Name ↓ | Zone | Recommendations | In use by | Internal IP | External IP |
|---|---|---|---|---|---|---|---|
| ☐ | ✔ | tf-lab-vm | us-west1-b | | | 10.138.0.15 (nic0) | 34.168.55.43 (nic0) |

6. **Take a screenshot of the successful ssh login from Cloud Shell.**

```
The list of available updates is more than a week old.
To check for new updates run: sudo apt update
New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


Last login: Thu Nov  9 03:29:12 2023 from 35.197.16.158
khod2@tf-lab-vm:~$
```

7. **What resources are being added, changed, or destroyed?**

> The google_compute_instance resource is being destroyed and re-added because of the new startup script, and adding a new tag. There are various components being changed inside google_compute_instance.

**What part of the configuration forces a replacement to occur?**

> The metadata_startup_script.

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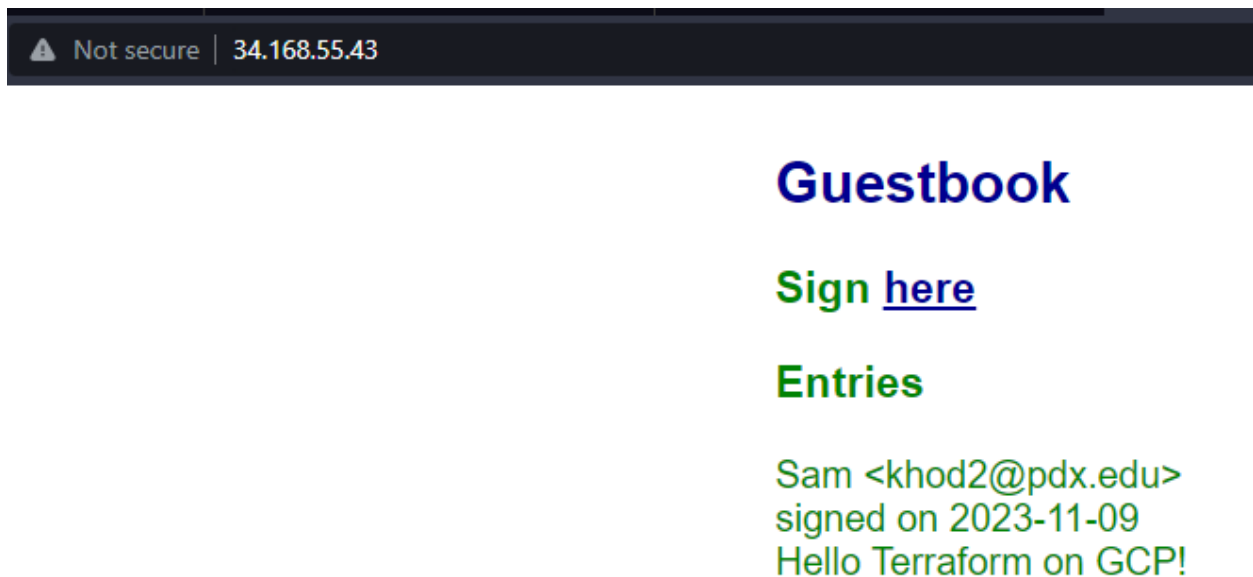


**7.2g**

4. **What is the name of the Instance Template dynamically generated to create the two nodes (VMs)?**
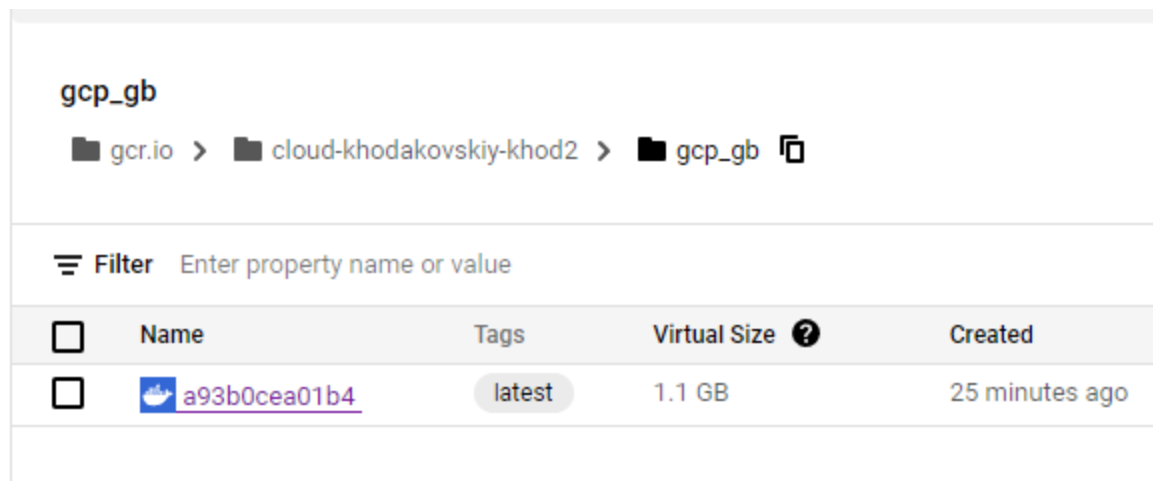
> gke-guestbook-default-pool-c98b06f6.

**What is the name of the Instance Group dynamically generated that the two nodes belong to?**

gke-guestbook-default-pool-c98b06f6-grp.

**What are the names of the two nodes?**

gke-guestbook-default-pool-c98b06f6-vm6t  and
gke-guestbook-default-pool-c98b06f6-1fxv.

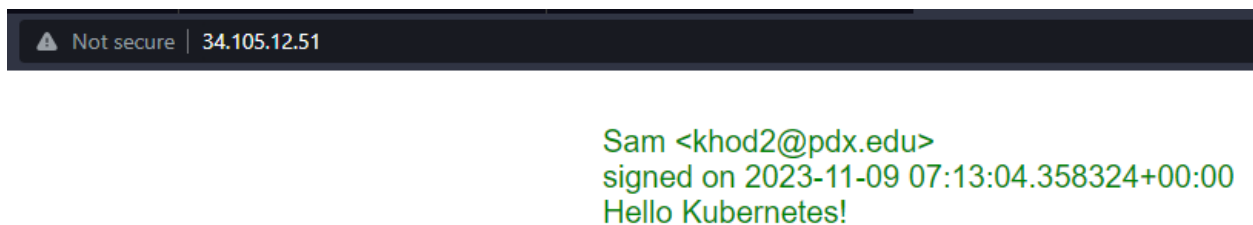5. **Take a screenshot of the container image created.**



7. **Take a screenshot of the output of the following command when all 3 replicas reach a "Running" state.**

```
khod2@cloudshell:~/cs430-src/05_gcp_datastore (cloud-khodakovskiy-khod2)$ kubectl get pods
NAME                        READY    STATUS     RESTARTS    AGE
guestbook-replicas-4f69b    1/1      Running    0           89s
guestbook-replicas-rd7dm    1/1      Running    0           90s
guestbook-replicas-sp27x    1/1      Running    0           89s
khod2@cloudshell:~/cs430-src/05_gcp_datastore (cloud-khodakovskiy-khod2)$ 
```

**Take a screenshot of listing services with LoadBalancer indicating an external IP address that is ready for access.**

```
khod2@cloudshell:~/cs430-src/05_gcp_datastore (cloud-khodakovskiy-khod2)$ kubectl get services
NAME            TYPE           CLUSTER-IP    EXTERNAL-IP    PORT(S)        AGE
guestbook-lb    LoadBalancer   10.20.1.40    34.105.12.51   80:32631/TCP   2m32s
kubernetes      ClusterIP      10.20.0.1     <none>         443/TCP        140m
khod2@cloudshell:~/cs430-src/05_gcp_datastore (cloud-khodakovskiy-khod2)$ 
```

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

⚠ Not secure | 34.105.12.51

Sam <khod2@pdx.edu>
signed on 2023-11-09 07:13:04.358324+00:00
Hello Kubernetes!

**Take a screenshot of the managed guestbook pods and the service being exposed.**

cloud-Khodakovskiy-khod2 ▼          kubernetes

← Replication Controller details          ⟳ REFRESH     ✏ EDIT     🗑 DELETE     ☰

**Managed pods**

| Name | Status | Restarts | Created on ↑ |
|---|---|---|---|
| guestbook-replicas-rd7dm | ✔ Running | 0 | Nov 8, 2023, 10:59:52 PM |
| guestbook-replicas-sp27x | ✔ Running | 0 | Nov 8, 2023, 10:59:53 PM |
| guestbook-replicas-4f69b | ✔ Running | 0 | Nov 8, 2023, 10:59:53 PM |

**Exposing services** ❓

| Name ↑ | Type | Endpoints |
|---|---|---|
| guestbook-lb | Load balancer | 34.105.12.51:80 ↗ |

**Take a screenshot of the load balancer and its details.**

I do want to note that this is not in "Network Services", but in "Services and Ingress" now (unless I got the wrong details).

**Take a screenshot of the addresses allocated and indicate the ones associated with nodes versus the one associated with the load balancer.**

| | Name | IP address | Access type | Region | Type | Version | In use by ↓ |
|---|---|---|---|---|---|---|---|
| ☐ | – | 34.83.46.96 | External | us-west1 | Ephemeral | IPv4 | VM instance gke-guestbook-default-pool-c98b06f6-vm6t (Zone us-west1-b) |
| ☐ | – | 34.168.55.43 | External | us-west1 | Ephemeral | IPv4 | VM instance gke-guestbook-default-pool-c98b06f6-1fxv (Zone us-west1-b) |
| ☐ | – | 34.105.12.51 | External | us-west1 | Ephemeral | IPv4 | Forwarding rule aeadf31c12d4149768bacc99f47cecce |

IP addresses — RESERVE EXTERNAL STATIC IP ADDRESS — RESERVE INTERNAL STATIC IP ADDRESS — ↻ REFRESH — RELEASE STAT

ALL   INTERNAL IP ADDRESSES   EXTERNAL IP ADDRESSES   IPV4 ADDRESSES   IPV6 ADDRESSES

≡ Filter   Enter property name or value

cloud-Khodakovskiy-khod2 ▼        vpc network

The node addresses are the first two (34.83.46.96, 34.168.55.43), the load balancer address is the last one (34.105.12.51).

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

34.105.12.51

Hello Datastore!

Sam <khod2@pdx.edu>
signed on 2023-11-09 08:12:56.989038+00:00
Hello Cloud Build!

**7.3g**

2. **Does Google provide a Python package specifically for accessing the Knowledge Graph API?**

> Yes, there is an API called "Google Knowledge Graph Search API", used with kgsearch.googleapis.com

3. **Show the source line that constructs the query we wish to send to the Knowledge Graph API.**

```
88    # [START functions_slack_request]
89    def make_search_request(query):
90        req = kgsearch.entities().search(query=query, limit=1)
```

**Show the source line that then executes the query and saves the response. What is the name of the method that sends the query to the Knowledge Graph API?**

```
91        res = req.execute()
92        return format_slack_message(query, res)
```

> The name of the method is execute(), called by the result of kgsearch.entities().search().

**What is the Python data type that is used to represent the formatted message?**

> The formatted message is returned as a dictionary with an array of attachments inside it.

**What are the three main attributes of the formatted message passed back to Slack?**

> The message consists of three attributes: a response type, text query, and an array of attachments (dictionaries).

**Take a screenshot of its response for your lab notebook.**
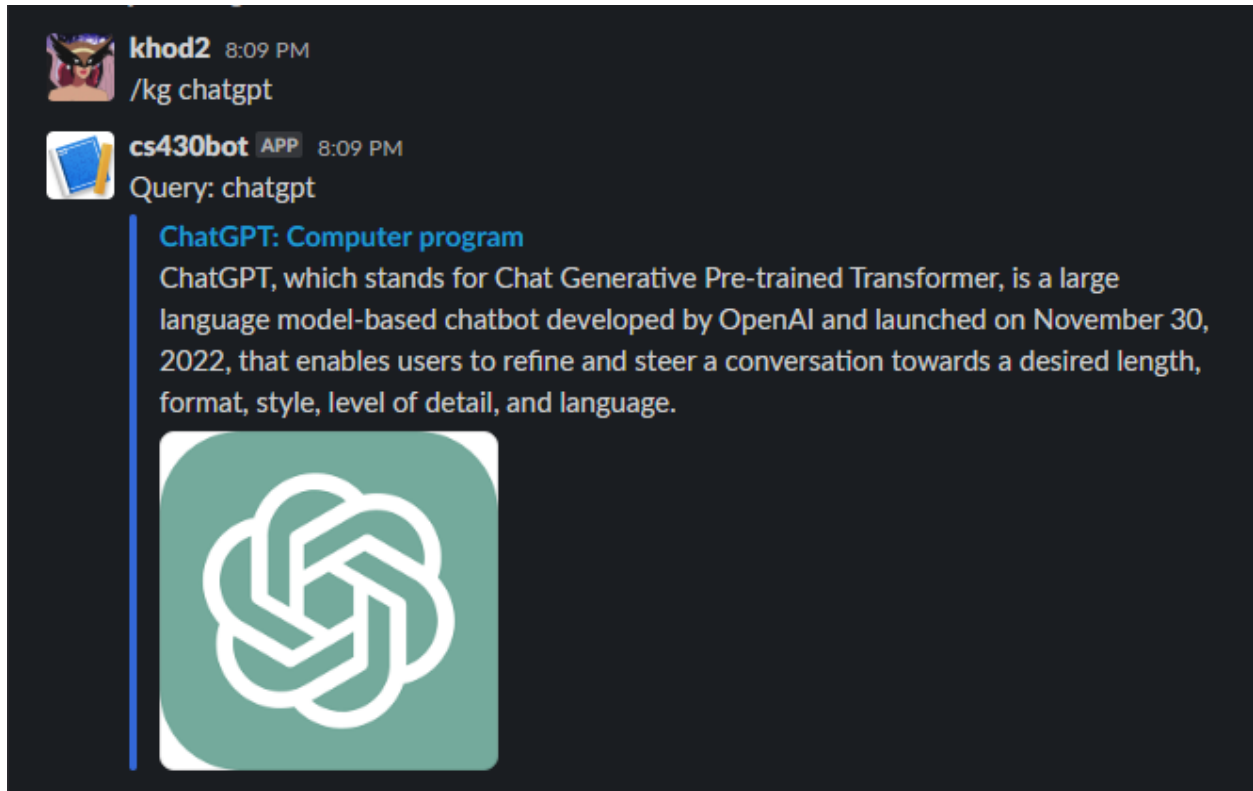


**7.4g**

3. **Show the output for your lab notebook.**

```
(env) khod2@cloudshell:~/.../snippets/detect (cloud-khodakovskiy-khod2)$ python detect.py
 labels-uri gs://cloud-samples-data/ml-api-codelab/birds.jpg
Labels:
Bird
Ratite
Cloud
Sky
Beak
Plant
Green
Neck
Ostrich
Casuariiformes
(env) khod2@cloudshell:~/.../snippets/detect (cloud-khodakovskiy-khod2)$
```

**What is the name of the function?**

    detect_labels_uri().

**What type of Vision client is instantiated in it?**

    ImageAnnotatorClient().

**What method is invoked in the Vision client to perform the detection?**

    client.label_detection().

**What is the name of the attribute in the response object that contains the results we seek?**

    response.label_annotations.

**Take a screenshot of the output for the above commands.**

```
(env) khod2@cloudshell:~/.../snippets/detect (cloud-khodakovskiy-khod2)$ python detect.py logos psu_logo.jpg
Logos:
Portland State University
(env) khod2@cloudshell:~/.../snippets/detect (cloud-khodakovskiy-khod2)$ ▊
```

    I was not able to screenshot the image creation command as I got an error initially

    for the python command.

**What method is invoked in the Vision client to perform the detection?**

    client.logo_detection().

**4. Show the output for your lab notebook.**

```
(env) khod2@cloudshell:~/.../speech/snippets (cloud-khodakovskiy-khod2)$
python transcribe.py resources/audio.raw
Transcript: how old is the Brooklyn Bridge
(env) khod2@cloudshell:~/.../speech/snippets (cloud-khodakovskiy-khod2)$
```

**What is the name of the function?**

transcribe_file().

**What method is invoked in the Speech client to perform the detection?**

client.recognize().

**What is the name of the attribute in the response object that contains the results we seek?**

response.results.

**5. Show the output for your lab notebook.**

```
(env) khod2@cloudshell:~/.../samples/snippets (cloud-khodakovskiy-khod2)$
 python snippets.py translate-text en '你有沒有帶外套'
Text: 你有沒有帶外套
Translation: did you bring a coat
Detected source language: zh-TW
(env) khod2@cloudshell:~/.../samples/snippets (cloud-khodakovskiy-khod2)$
```

**What is the name of the function?**

translate_text().

**What method is invoked in the Translate client to perform the detection?**

translate_client.translate().

**What is the name of the attribute in the response object that contains the results we seek?**

result["translateText"].

6. **Show the output for your lab notebook.**

```
py..... ...g...g...j   ... p.........  .. o. ego. p.. o. g.. m.... ... .o. . j...... . ... ..
"homework is awful!" has sentiment=-0.800000011920929

Entities are:
name: homework
"homework is ok" has sentiment=0.30000001192092896

Entities are:
name: homework
"homework is awesome?" has sentiment=0.4000000059604645

Entities are:
name: homework
"homework is awesome!" has sentiment=0.8999999761581421

Entities are:
name: homework
"The protestors in Oregon put on gas masks and wore yellow t-shirts" has sentiment=-0.600000
0238418579

Entities are:
name: protestors
name: gas masks
name: Oregon
name: t-shirts
(env) khod2@cloudshell:~ (cloud-khodakovskiy-khod2)$ █
```

8. **What is the name of the function that performs the transcription?**

transcribe_gcs().

**What is the name of the function that performs the translation?**

translate_text().

**What is the name of the function that performs the entity analysis on the translation?**

entities_text().

**What is the name of the function that performs the entity analysis on the image?**

detect_labels_uri().

9. **If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?**

The entities/match check should probably be uniformly formatted to avoid mismatched letter case.

**If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?**

We could use a library to check similarity between the entities, since "bike" and "bicycle" are related, but the exact strings don't match each other.

**If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?**

Again, a library should probably be used here. I'm not aware of another way to relate "ostrich" and "ostriches" without some rudimentary string checking that wouldn't fix the other issues above ^.

13. **What are the 3 labels with the highest confidence that the Video Intelligence API associates with the video and what are the confidences for each?**

Sports (confidence: 0.9218811392784119), Basketball (confidence: 0.9137870669364929), and player (confidence: 0.8446521162986755).
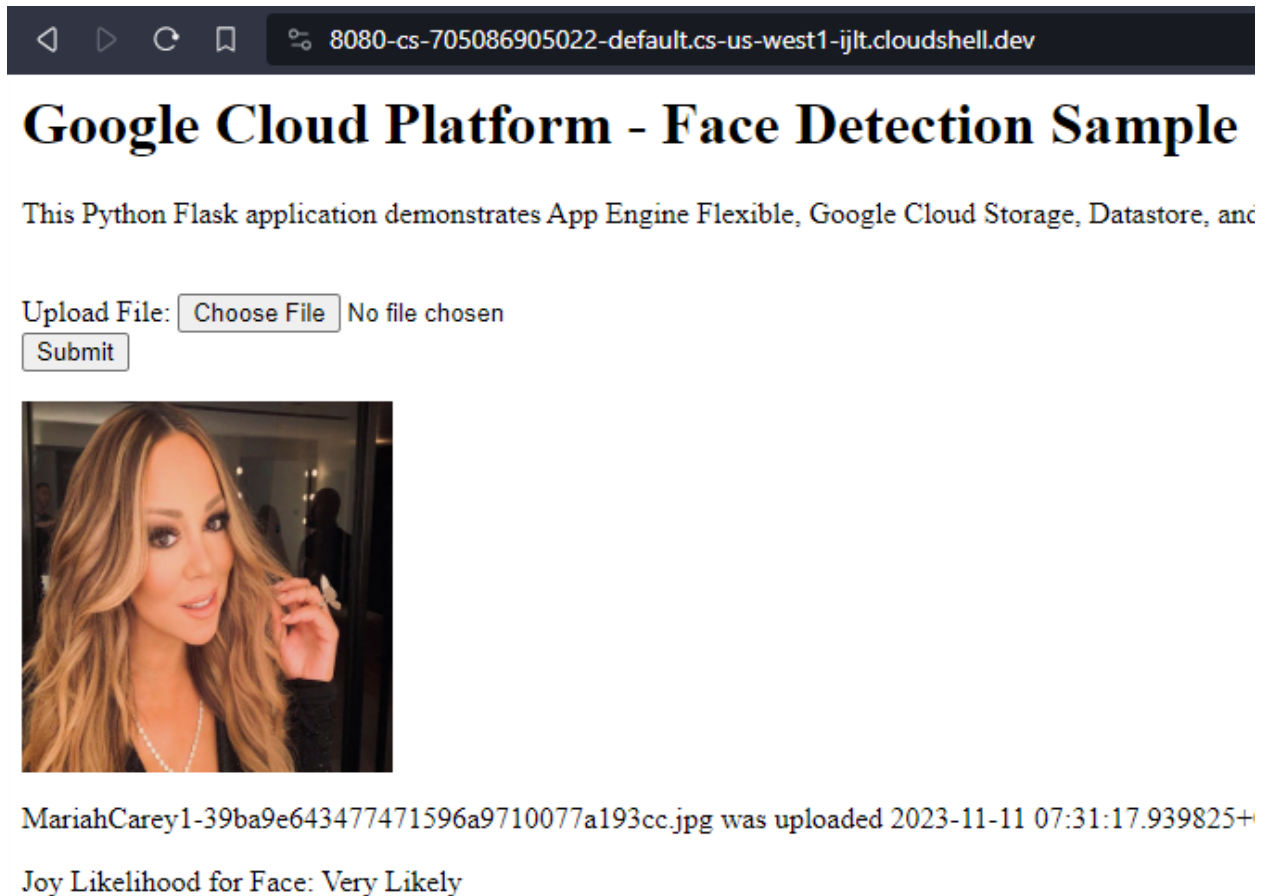
**What is the name of the client class in the package that is used?**

videointelligence.VideoIntelligenceServiceClient().

**What method is used in that class to perform the annotation?**

video_client.annotate_video().

**16. Take a screenshot for your lab notebook that includes the URL.**

**17. What line of code creates the query for previous detections?**

```
query = datastore_client.query(kind="Faces")
```

**What line of code sends the query to Cloud Datastore?**

```
image_entities = list(query.fetch())
```

**Show the line that retrieves the name of the storage bucket to use.**

```
CLOUD_STORAGE_BUCKET = os.environ.get("CLOUD_STORAGE_BUCKET")
```

**What form field is used to specify the uploaded photo?**

The "file" form field (`photo = request.files["file"]`).

**Show the line that copies the photo's contents to the storage bucket.**

```
blob.upload_from_string(photo.read(),
content_type=photo.content_type)
```

**What method in Vision's annotation client is used to perform the analysis?**

```
vision_client.face_detection().
```

**What fields are stored in Cloud Datastore for each image?**

Blob name, public image URL, timestamp, and joy rating.

**What happens at the end of the `upload_photo` route?**

The image entity is saved to the datastore and the page is redirected to the default route.