

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.

<div> </div> <div> N. Virginia ▼ voclabs/user2807955=khod2@pdx.edu @ 1012-2514-1593 ▼ </div>			
<div> Connect Instance state ▼ Actions ▼ Launch instances </div>			
<div> < 1 > </div>			
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
```

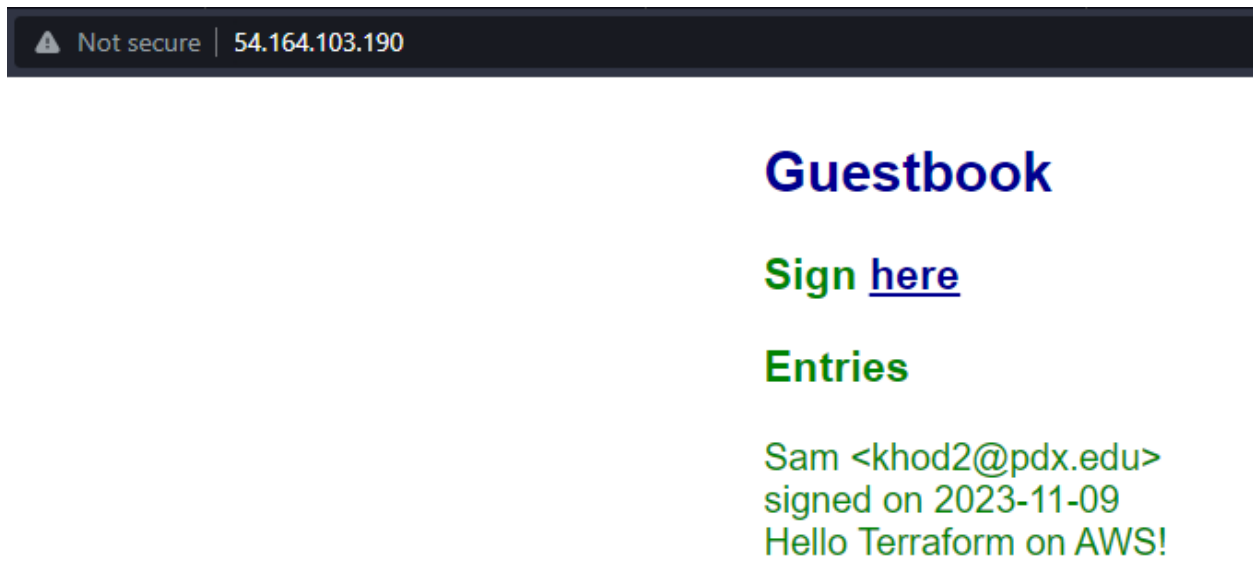
7. Take a screenshot of the output of the command that includes the IP address of the instance.

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

Outputs:

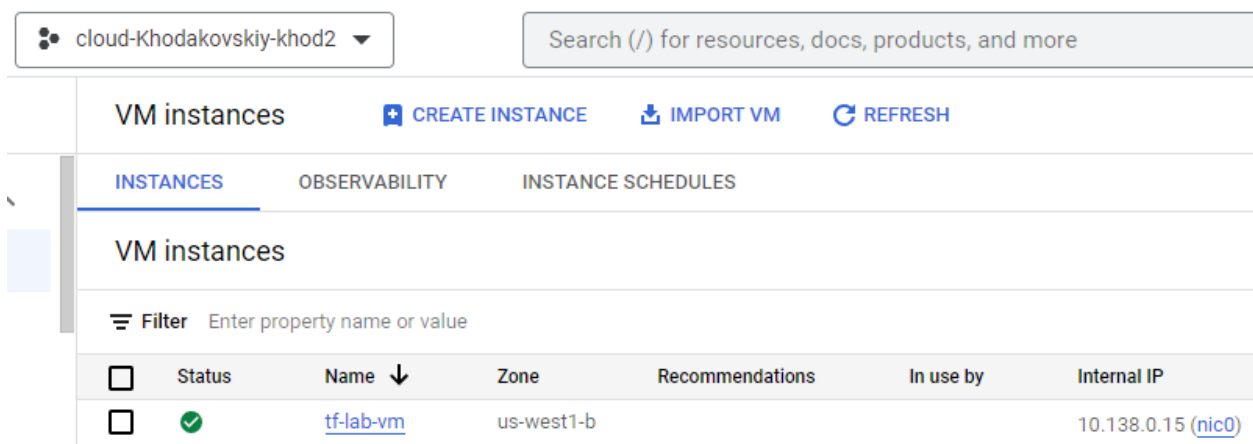
ec2instance = "54.164.103.190"
[cloudshell-user@ip-10-6-84-190 tf]$ khod2
```

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



7.1g

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



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-khodakov:
google_compute_instance.default: Still modifying... [id=projects/cloud-kh:
google_compute_instance.default: Modifications complete after 11s [id=pro:

```

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

VM instances

CREATE INSTANCE

IMPORT VM

REFRESH

INSTANCES

OBSERVABILITY

INSTANCE SCHEDULES

VM instances

Filter

Enter property name or value

<input type="checkbox"/>	Status	Name ↓	Zone	Recommendations	In use by	Internal IP	External IP
<input type="checkbox"/>	✓	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:~$ 

```

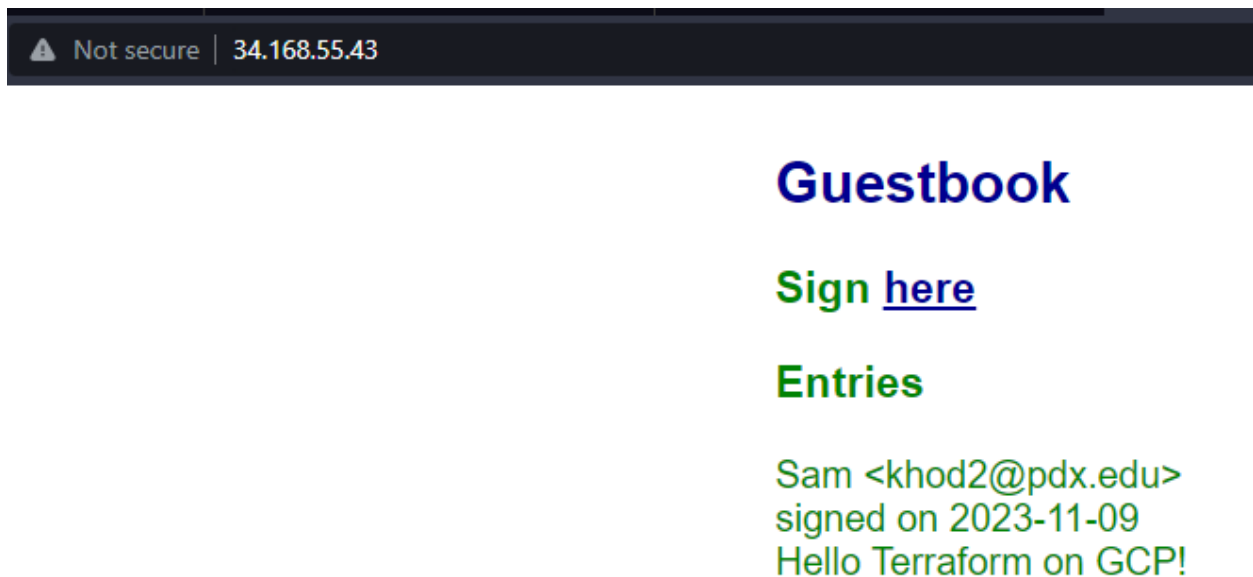
7. What resources are being added, changed, or destroyed?

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.

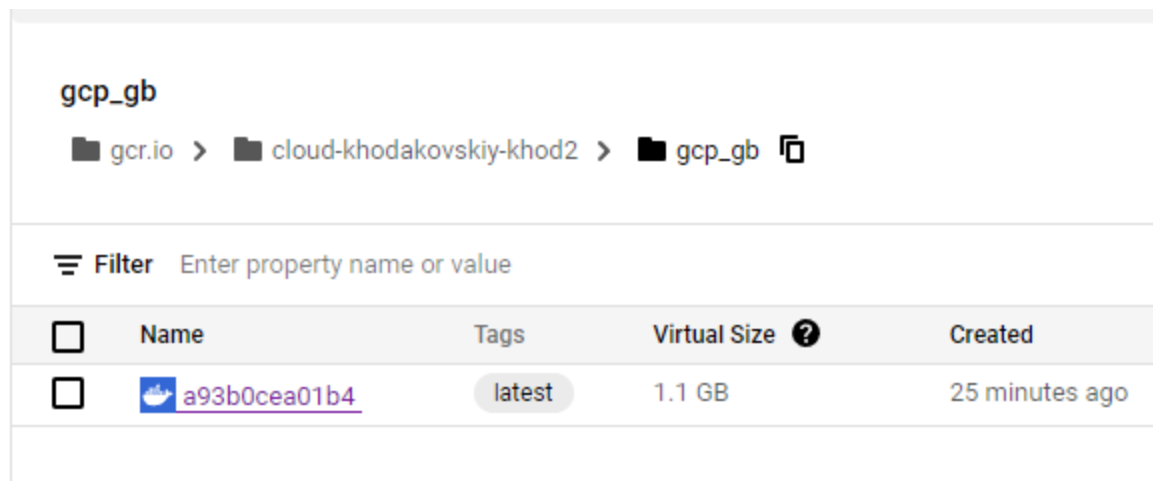
What is the name of the Instance Group dynamically generated that the two nodes belong to?

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.



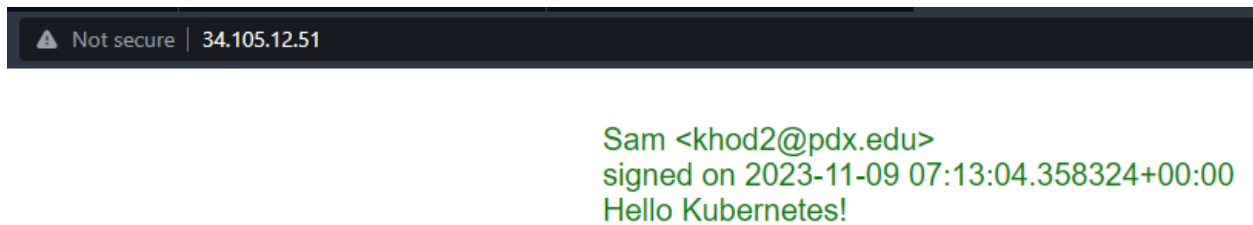
7. Take a screenshot of the output of the following command when all 3 replicas reach a "Running" state.

```
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.



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).

cloud-Khodakovskiy-khod2
kubernetes network services

Service details
REFRESH
EDIT
DELETE
KUBECTL

✓ **guestbook-lb**

OVERVIEW
DETAILS
EVENTS
LOGS
APP ERRORS
YAML

✓ 1 hour 6 hours 12 hours

CREATE UPTIME CHECK

CPU

Memory

No data is available for the selected time frame.
No data is available for the selected time frame.

Cluster
[guestbook](#)

Namespace
default

Labels
app: guestbook tier: frontend

Logs
[Service logs](#)

Type
LoadBalancer

External endpoints
[34.105.12.51:80](#)

Load Balancer

Cluster IP
10.20.1.40

Load balancer IP
34.105.12.51

Load balancer
[aeadf31c12d4149768bacc99f47cecce](#)

Serving pods

Name	Status	Endpoints	Restarts	Created on ↑
guestbook-replicas-rd7dm	✓ Running	10.16.0.9	0	Nov 8, 2023, 10:59:52 PM
guestbook-replicas-sp27x	✓ Running	10.16.1.14	0	Nov 8, 2023, 10:59:53 PM
guestbook-replicas-4f69b	✓ Running	10.16.0.8	0	Nov 8, 2023, 10:59:53 PM

Ports

Port	Node Port	Target Port	Protocol
80	32631	8000	TCP

PORT FORWARDING

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

cloud-Khodakovskiy-khod2
vpc network

IP addresses								RESERVE EXTERNAL STATIC IP ADDRESS	RESERVE INTERNAL STATIC IP ADDRESS	REFRESH	RELEASE STA
ALL	INTERNAL IP ADDRESSES	EXTERNAL IP ADDRESSES	IPV4 ADDRESSES	IPV6 ADDRESSES							
Filter Enter property name or value											
<input type="checkbox"/>	Name	IP address	Access type	Region	Type	Version	In use by ↓				
<input type="checkbox"/>	–	34.83.46.96	External	us-west1	Ephemeral	IPv4	VM instance gke-guestbook-default-pool-c98b06f6-vm6t (Zone us-west1-b)				
<input type="checkbox"/>	–	34.168.55.43	External	us-west1	Ephemeral	IPv4	VM instance gke-guestbook-default-pool-c98b06f6-1fxv (Zone us-west1-b)				
<input type="checkbox"/>	–	34.105.12.51	External	us-west1	Ephemeral	IPv4	Forwarding rule aeadf31c12d4149768bacc99f47cecce				

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] KHOD2
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() KHOD2
92     return format_slack_message(query, res)
```

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

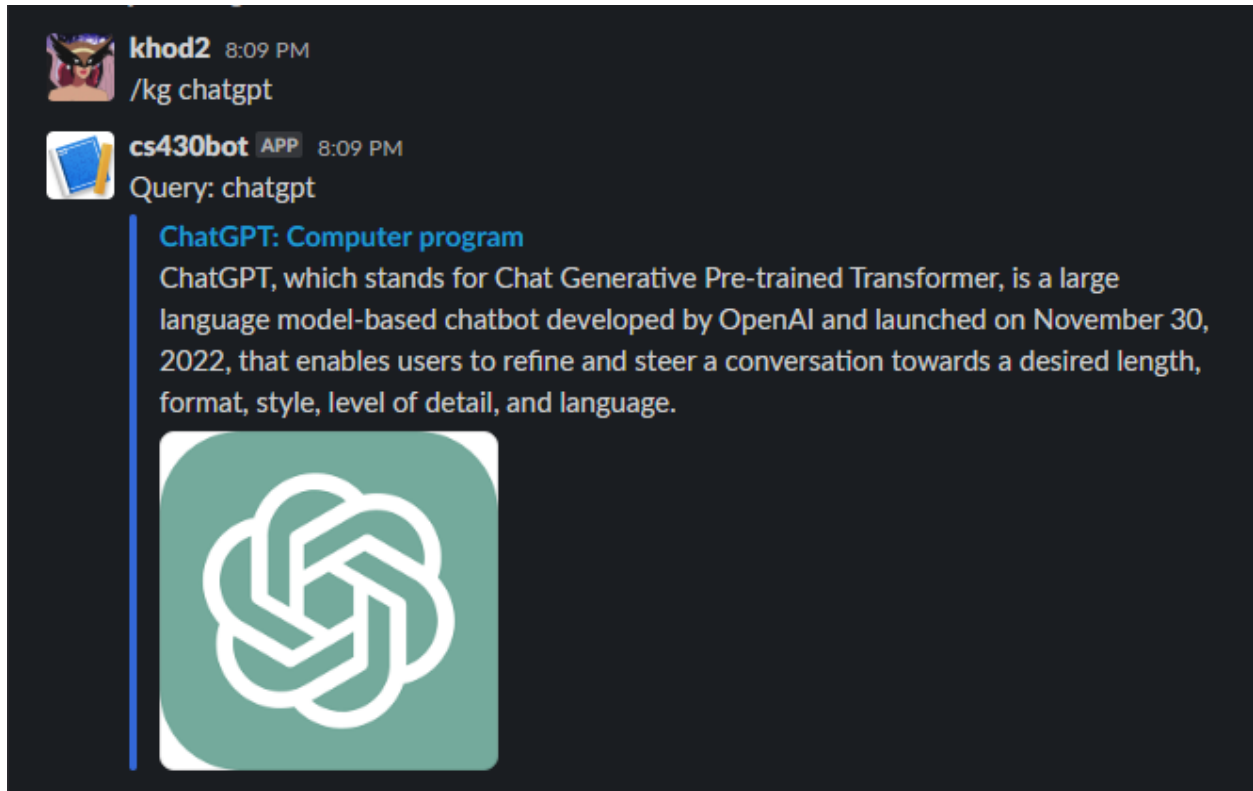
What is the Python data type that is used to represent the formatted message?

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.

```
python3 sentiment.py --text "homework is awful!" --entity "homework" --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).

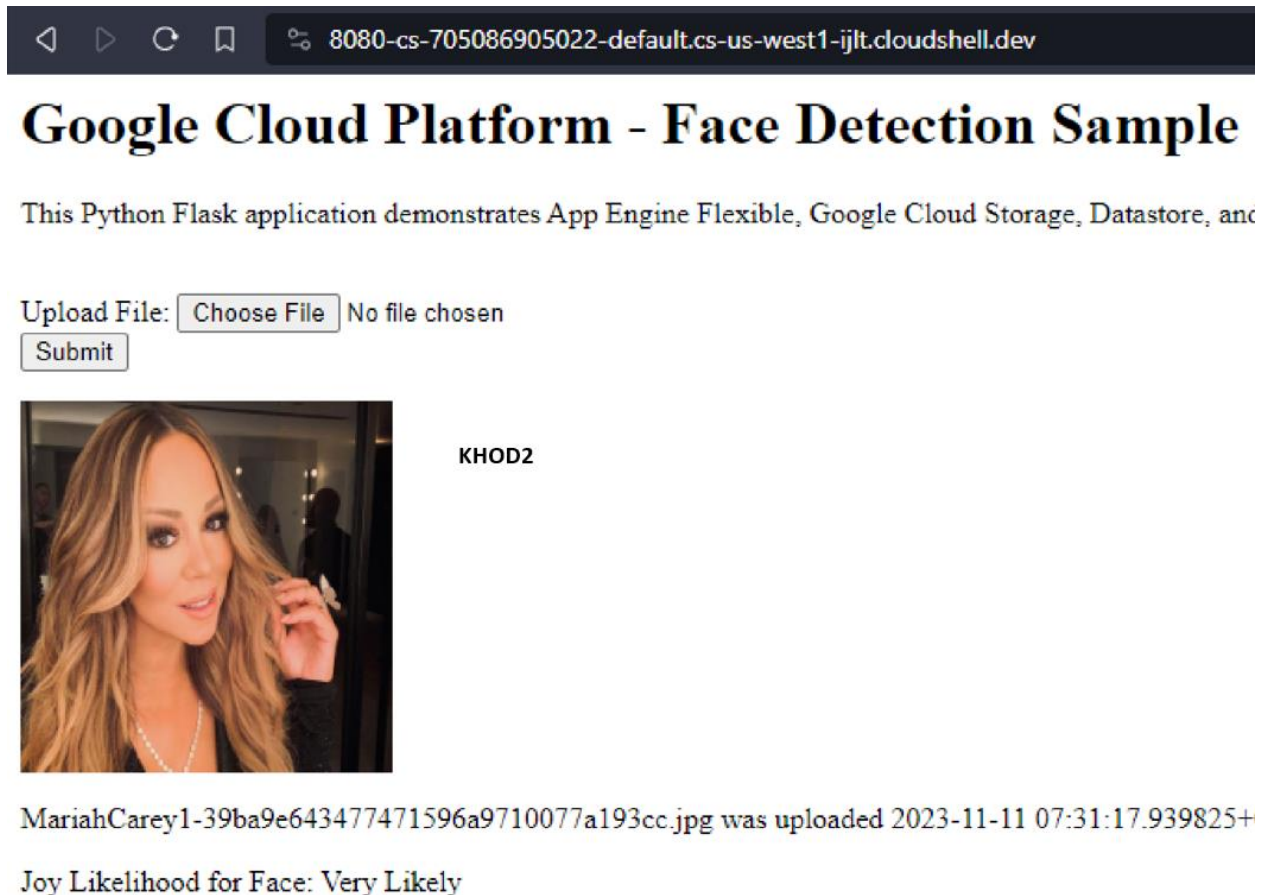
What is the name of the client class in the package that is used?

`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.