

Lab 07

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CS530: Internet Web & Cloud, Fall 2023

Odin: srimel

** In all the terminal screenshots my Odin name is in the terminal prompt **

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7.1a: Terraform AWS Guestbook

7.1a.4: Launching configuration

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

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

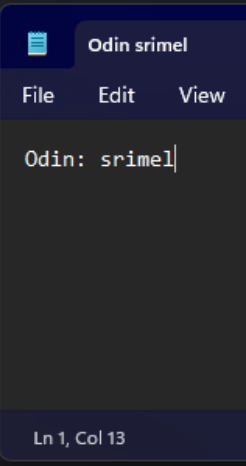
Do you want to perform these actions?
  Terraform will perform the actions described above.
  Only 'yes' will be accepted to approve.

  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 32s [id=i-05381a30777c6c7fb]

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

Outputs:
ec2instance = "54.242.196.246"
[cloudshell-user@ip-10-4-99-95 tf]$
```







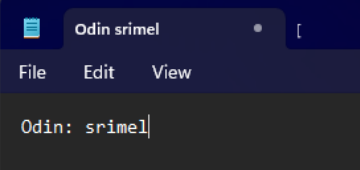
A terminal window on the right side of the screenshot shows a file editor with the filename 'Odin srimel'. The editor has a menu bar with 'File', 'Edit', and 'View'. The text 'Odin: srimel' is visible in the editor area. The status bar at the bottom of the editor indicates 'Ln 1, Col 13'.

EC2 > Instances > i-05381a30777c6c7fb

Instance summary for i-05381a30777c6c7fb [Info](#)

Updated less than a minute ago

| | |
|---|---|
| Instance ID | Public IPv4 address |
|  i-05381a30777c6c7fb |  54.242.196.246 open address  |
| IPv6 address | Instance state |
| — |  Running |
| Hostname type | |
| IP name: ip-172-31-29-176.ec2.internal | |
| Answer private resource DNS name | |
| — | |
| Auto-assigned IP address | |



A terminal window on the right side of the screenshot shows a file editor with the filename 'Odin srimel'. The editor has a menu bar with 'File', 'Edit', and 'View'. The text 'Odin: srimel' is visible in the editor area.

7.1a.6: Adding ssh access

us-east-1

```
ECDSA key fingerprint is MD5:b1:c5:78:5d:68:31:d8:ef:a1:01:ac:3f:da:48:eb:a5.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added '54.175.100.57' (ECDSA) to the list of known hosts.  
Welcome to Ubuntu 20.04.2 LTS (GNU/Linux 5.4.0-1038-aws x86_64)
```

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

System information as of Fri Nov 10 04:50:36 UTC 2023

```
System load:  0.22      Processes:            104  
Usage of /:   16.3% of 7.69GB   Users logged in:     0  
Memory usage: 23%      IPv4 address for eth0: 172.31.18.94  
Swap usage:   0%
```

```
1 update can be installed immediately.  
0 of these updates are security updates.  
To see these additional updates run: apt list --upgradable
```

```
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.
```

```
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.
```

```
ubuntu@ip-172-31-18-94:~$ echo "Odin: srimel"  
Odin: srimel  
ubuntu@ip-172-31-18-94:~$ █
```

7.1a.7: Adding the Guestbook application

Enter a value: yes

```
aws_key_pair.kp: Creating...
aws_security_group.sg-guestbook: Creating...
aws_key_pair.kp: Creation complete after 0s [id=guestbook-key]
aws_security_group.sg-guestbook: Creation complete after 2s [id=sg-0ccecbbdd9e3e2946c]
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: Still creating... [40s elapsed]
aws_instance.guestbook: Creation complete after 42s [id=i-022dcfddfd758c532]
```

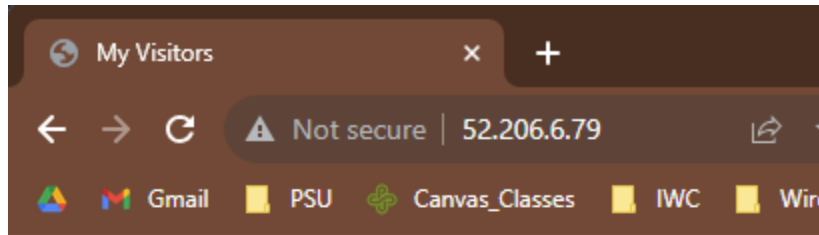
Apply complete! Resources: 3 added, 0 changed, 0 destroyed.

Outputs:

```
ec2instance = "52.206.6.79"
[cloudshell-user@ip-10-4-99-95 tf]$ echo "Odin: srimel"
Odin: srimel
[cloudshell-user@ip-10-4-99-95 tf]$
```

```
ubuntu@ip-172-31-29-34:~$ ps auxww | grep gunicorn
root      7445  0.4  2.2 30632 22836 ?        S    05:01   0:00 /usr/bin/python3 /usr/bin/gunicorn --bind :80 --workers 1 --threads 8 app:app
root      7447  0.2  2.9 39236 29384 ?        S    05:01   0:00 /usr/bin/python3 /usr/bin/gunicorn --bind :80 --workers 1 --threads 8 app:app
ubuntu    7455  0.0  0.0   6432   656 pts/1    S+   05:02   0:00 grep --color=auto gunicorn
ubuntu@ip-172-31-29-34:~$ echo "Odin: srimel"
Odin: srimel
ubuntu@ip-172-31-29-34:~$
```

7.1a.8: View the Guestbook



Guestbook

Sign [here](#)

Entries

Stuart Rimel <srimel@pdx.edu>
signed on 2023-11-10
Hello Terraform on AWS!

7.1g: Terraform GCP Guestbook

7.1g.4: Launching configuration

VM instances

Filter Enter property name or value

| <input type="checkbox"/> | Status | Name ↑ | Zone | In use by | Internal IP |
|--------------------------|--------|-----------------------------------|------------|-----------|--------------------------------------|
| <input type="checkbox"/> | ○ | course-vm | us-west1-b | | 10.138.0.2 (nic0) |
| <input type="checkbox"/> | ○ | course-vm-image-1 | us-west1-a | | 10.138.0.17 (nic0) |
| <input type="checkbox"/> | ✓ | tf-lab-vm | us-west1-b | | 10.138.0.20 (nic0) |

Odin srimel NAME ubuntu-minimal + - □ ×

File Edit View ⚙

```
Odin: srimel
```

7.1g.5: Adding an external IP address

```
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

google_compute_address.static: Creating...
google_compute_address.static: Still creating... [10s elapsed]
google_compute_address.static: Creation complete after 11s [id=projects/cloud-rimel-srimel/regions/us-west1/addresses/ipv4-address]
google_compute_instance.default: Modifying... [id=projects/cloud-rimel-srimel/zones/us-west1-b/instances/tf-lab-vm]
google_compute_instance.default: Still modifying... [id=projects/cloud-rimel-srimel/zones/us-west1-b/instances/tf-lab-vm, 10s elapsed]
google_compute_instance.default: Modifications complete after 11s [id=projects/cloud-rimel-srimel/zones/us-west1-b/instances/tf-lab-vm]

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

Outputs:

ip = "34.105.96.148"
srimel@cloudshell:~/tf (cloud-rimel-srimel)$
```

VM instances

Filter Enter property name or value

| <input type="checkbox"/> | Status | Name ↑ | Zone | In use by | Internal IP | External IP |
|--------------------------|--------|-----------------------------------|------------|-----------|--------------------------------------|--|
| <input type="checkbox"/> | ○ | course-vm | us-west1-b | | 10.138.0.2 (nic0) | |
| <input type="checkbox"/> | ○ | course-vm-image-1 | us-west1-a | | 10.138.0.17 (nic0) | |
| <input type="checkbox"/> | ● | tf-lab-vm | us-west1-b | | 10.138.0.20 (nic0) | 34.105.96.148 (nic0) |

Odin: srime1

NAME ubuntu-minimal

File Edit View

Odin: srime1

Monitor VMs
View outlier VMs across metrics and network

7.1g.6: Adding ssh access

```
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.

srime1@tf-lab-vm:~$ echo "Odin: srime1"
Odin: srime1
srime1@tf-lab-vm:~$
```

7.1g.7: Adding the Guestbook application

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

Resources being added:

- Resource google_compute_instance (replaced)

Resources being changed: 0

Resources being destroyed:

- Resource google_compute_instance (replaced)

Adding the metadata_startup_script to the instance is forcing replacement

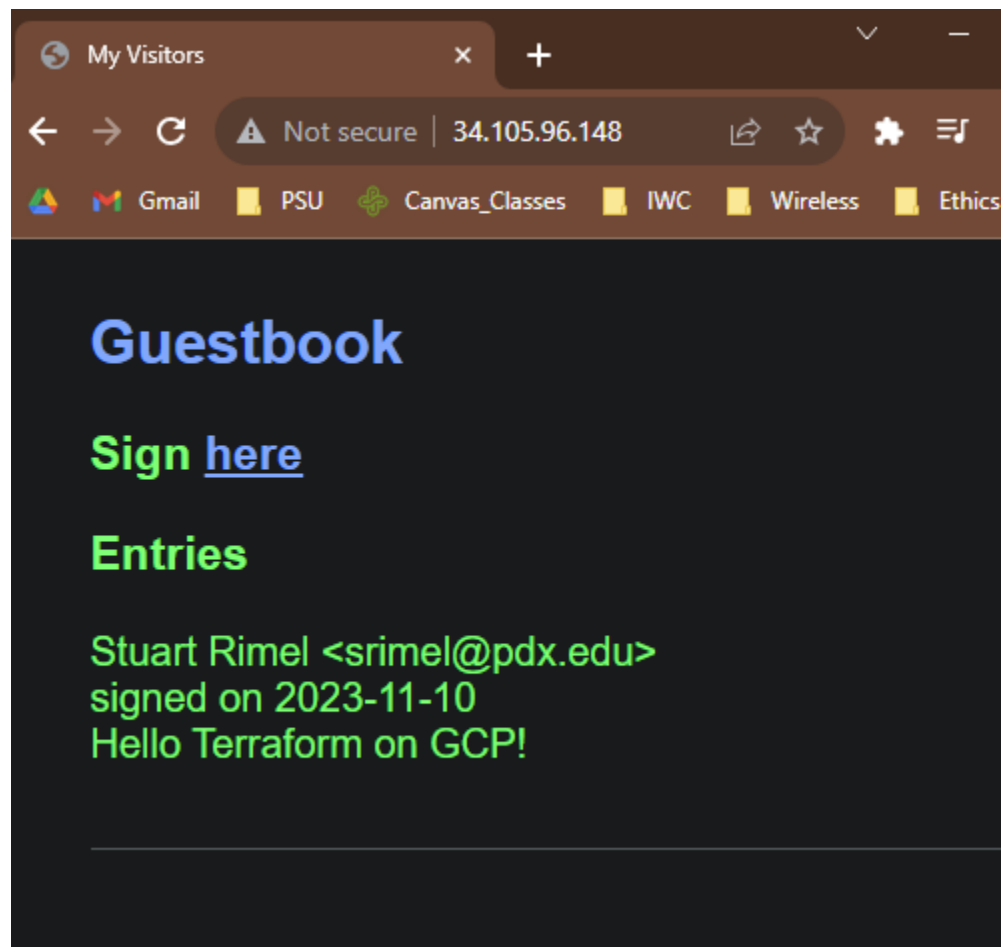
```
Terraform will perform the following actions:

# google_compute_instance.default must be replaced
/+ resource "google_compute_instance" "default" {
  - cpu_platform      = "Intel Broadwell" -> (known after apply)
  - current_status    = "RUNNING" -> (known after apply)
  - effective_labels   = {} -> (known after apply)
  - enable_display     = false -> null
  - guest_accelerator = {} -> (known after apply)
  - id                = "projects/cloud-rimel-srimel/zones/us-west1-b/instances/tf-lab-vm" -> (known after apply)
  - instance_id       = "61383795676542386" -> (known after apply)
  - label_fingerprint = "42MmSpB8rSM" -> (known after apply)
  - labels            = {} -> null
  - metadata_fingerprint = "PF71BA5zalk" -> (known after apply)
  + metadata_startup_script = <<EOT # forces replacement
    apt update
    pip install -y build-essential python3-pip gunicorn git
    pip install flask
    git clone https://github.com/wuif/cs430-src /root/cs430-src
    cd /root/cs430-src/03_nginx_gunicorn_certbot
    gunicorn --bind :80 --workers 1 --threads 8 apprapp
  EOT
  + min_cpu_platform = (known after apply)
  - name              = "tf-lab-vm"
  - resource_policies = {} -> null
  - self_link         = "https://www.googleapis.com/compute/v1/projects/cloud-rimel-srimel/zones/us-west1-b/instances/tf-lab-vm" -> (known after apply)
  - tags              = [
    + "http-server",
  ]
  - tags_fingerprint = "42MmSpB8rSM" -> (known after apply)
  - terraform_labels = {} -> (known after apply)
  # (6 unchanged attributes hidden)

  - boot_disk {
    - device_name = "persistent-disk-0" -> (known after apply)
    - disk_encryption_key_sha256 = (known after apply)
    + kms_key_self_link = (known after apply)
    - source            = "https://www.googleapis.com/compute/v1/projects/cloud-rimel-srimel/zones/us-west1-b/disks/tf-lab-vm" -> (known after apply)
    # (2 unchanged attributes hidden)

    - initialize_params {
      - image = "https://www.googleapis.com/compute/v1/projects/ubuntu-os-cloud/global/images/ubuntu-2004-focal-v20231101" -> "ubuntu-os-cloud/ubuntu-2004-focal-v20231101"
      - labels = {} -> (known after apply)
      - resource_manager_tags = {} -> null
      - size = 10 -> (known after apply)
      - type = "pd-standard" -> (known after apply)
    }
  }
}
```

7.1g.8: View the Guestbook

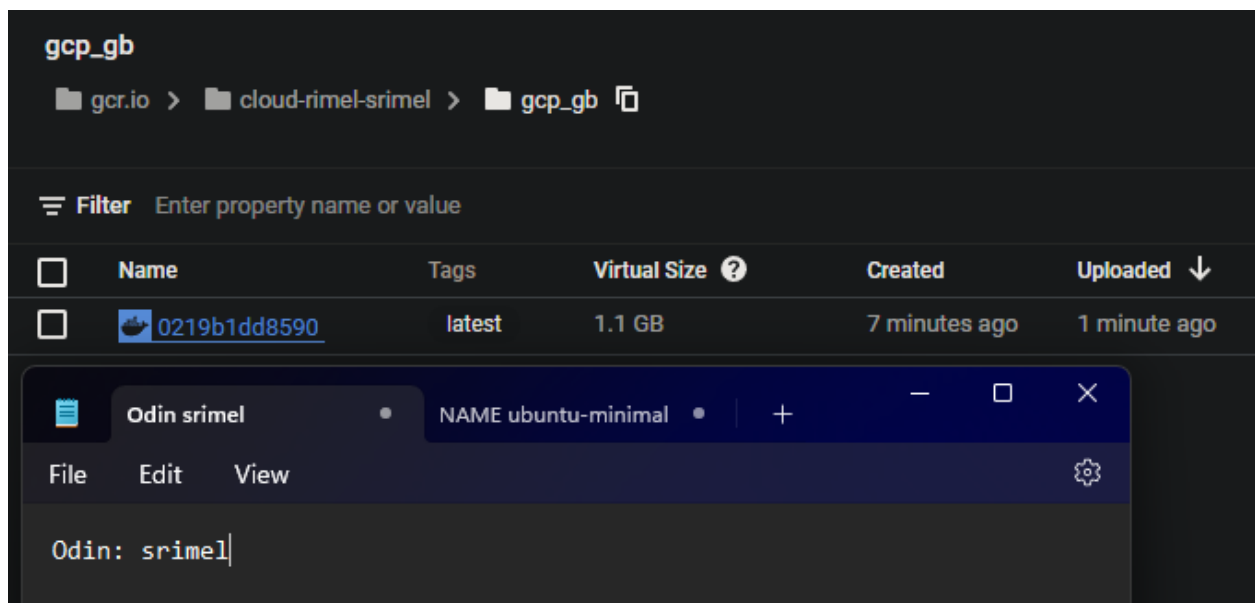


7.2g: Kubernetes Guestbook

7.2g.4: Create Kubernetes cluster

1. Instance template: gke-guestbook-default-pool-0a9eb3d6
2. Instance group: gke-guestbook-default-pool-0a9eb3d6-grp
3. Name of two nodes:
 - a. gke-guestbook-default-pool-0a9eb3d6-f0mf
 - b. gke-guestbook-default-pool-0a9eb3d6-rlzz

7.2g.5: Prepare a container image

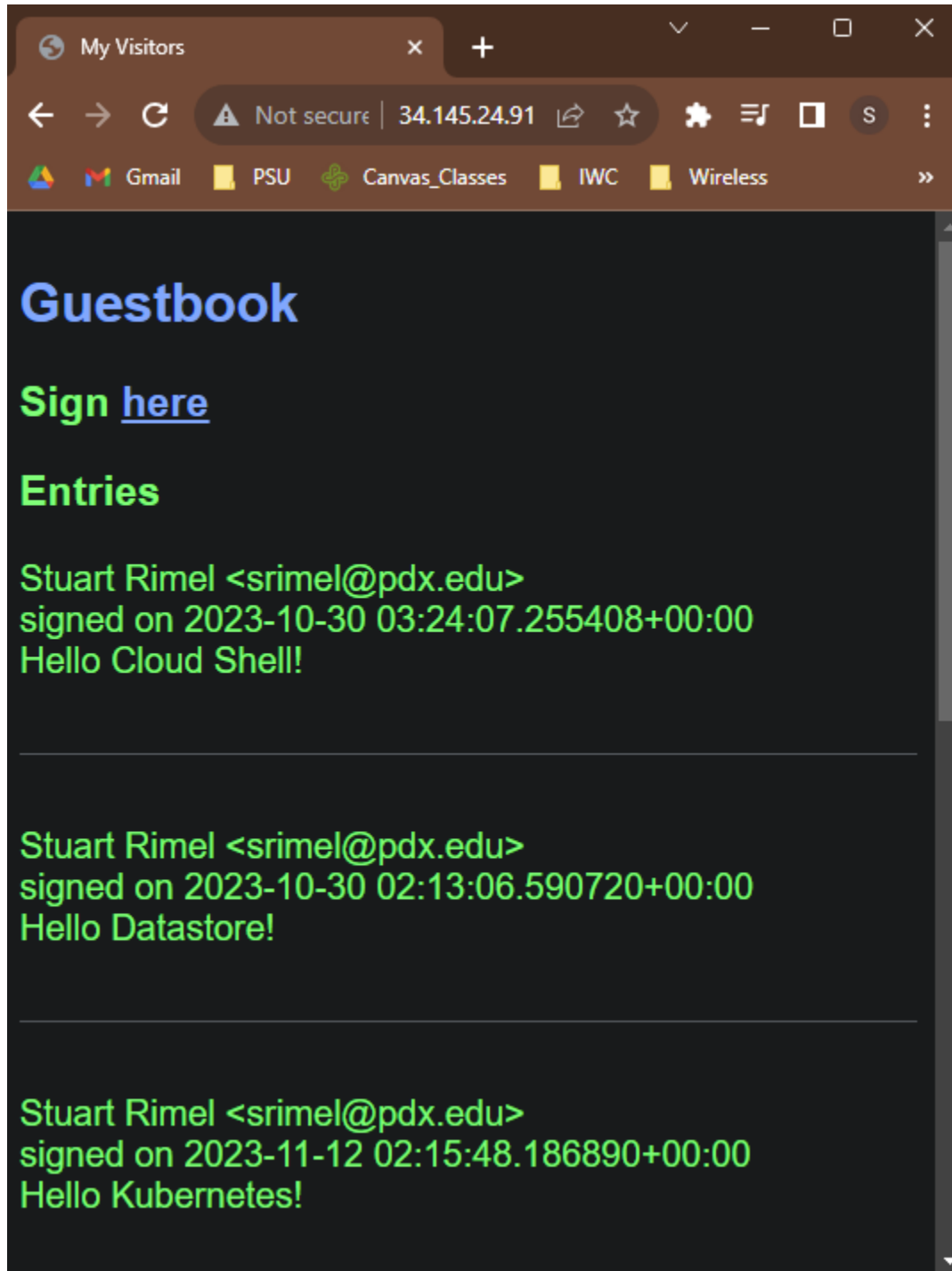


7.2g.7: Deploy the configuration

```
srime1@cloudshell:~/cs430-src/05_gcp_datastore (cloud-rime1-srime1)$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
guestbook-replicas-c6pzc            1/1     Running   0           100s
guestbook-replicas-grpw2            1/1     Running   0           100s
guestbook-replicas-nl665            1/1     Running   0           100s
srime1@cloudshell:~/cs430-src/05_gcp_datastore (cloud-rime1-srime1)$

srime1@cloudshell:~/cs430-src/05_gcp_datastore (cloud-rime1-srime1)$ kubectl get services
NAME          TYPE           CLUSTER-IP   EXTERNAL-IP   PORT(S)          AGE
guestbook-lb  LoadBalancer  10.20.15.159  34.145.24.91  80:32163/TCP     2m7s
kubernetes    ClusterIP      10.20.0.1    <none>        443/TCP          24m
srime1@cloudshell:~/cs430-src/05_gcp_datastore (cloud-rime1-srime1)$
```

7.2g.8: View the Guestbook



Managed pods

| Name | Status | Restarts | Created on ↑ |
|--|-----------|----------|--------------------------|
| questbook-replicas-nl665 | ✓ Running | 0 | Nov 11, 2023, 6:12:11 PM |
| questbook-replicas-c6pzc | ✓ Running | 0 | Nov 11, 2023, 6:12:11 PM |
| questbook-replicas-grpw2 | ✓ Running | 0 | Nov 11, 2023, 6:12:11 PM |

Exposing services ?

| Name ↑ | Type | Endpoints |
|------------------------------|---------------|-----------------------------------|
| questbook-lb | Load balancer | 34.145.24.91:80 ↗ |

Odin srimel

File Edit View

Odin: srimel|

Ln 1, Col 13

a6e586359e2d240ea9ca722fd63c9959

Target-pool Network Load Balancer

Frontend

| Protocol ↑ | IP version | IP:Port | Network Tier ? |
|------------|------------|-----------------|----------------|
| TCP | IPv4 | 34.145.24.91:80 | Premium |

Backend

| Name | Region | Health check |
|----------------------------------|----------|---|
| a6e586359e2d240ea9ca722fd63c9959 | us-west1 | k8s-5e152c4c353c7d80-node |

▼ ADVANCED CONFIGURATIONS

| Instance ↑ | Zone |
|--|------------|
| gke-questbook-default-pool-0a9eb3d6-f0mf | us-west1-b |
| gke-questbook-default-pool-0a9eb3d6-rlzz | us-west1-b |

Odin srimel

File Edit View

Odin: srimel|

| | |
|--------------------|---|
| Cluster | guestbook |
| Namespace | default |
| Labels | app: guestbook tier: frontend |
| Logs | Service logs |
| Type | LoadBalancer |
| External endpoints | 34.145.24.91:80 🔗 |

Load Balancer


| | |
|------------------|--|
| Cluster IP | 10.20.15.159 |
| Load balancer IP | 34.145.24.91 |
| Load balancer | a6e586359e2d240ea9ca722fd63c9959 |


Serving pods

| Name | Status | Endpoints | Restarts | Created on ↑ |
|--|-----------|------------|----------|---------------------------|
| guestbook-replicas-nl665 | ✔ Running | 10.16.1.9 | 0 | Nov 11, 2023, 6:12:11 PM |
| guestbook-replicas-c6pzc | ✔ Running | 10.16.0.14 | 0 | Nov 11, 2023, 6:12:11 PM |
| guestbook-replicas-grpw2 | ✔ Running | 10.16.1.8 | 0 | Nov 11, 2023, 6:12:11 PM |

Ports

| Port | Node Port | Target Port | Protocol |
|------|-----------|-------------|----------|
| 80 | 32163 | 8000 | TCP |

 **PORT FORWARDING**

 Odin srimel

NAME

File Edit View

Odin: srimel|

Ln 1, Col 13 100%

IP addresses

RESERVE EXTERNAL STATIC IP ADDRESSRESERVE INTERNAL STATIC IP ADDRESSREFRESHRELEASE STATIC ADDRESS

ALLINTERNAL IP ADDRESSESEXTERNAL IP ADDRESSESIPV4 ADDRESSESIPV6 ADDRESSES

Filter

Enter property name or value

| <input type="checkbox"/> | Name | IP address | Access type | Region | Type ↓ | Version | In use by | Subnetwork | VPC Network |
|--------------------------|-------------|-----------------------|-------------|----------|-----------|---------|--|-------------------------|-------------------------|
| <input type="checkbox"/> | — | 10.138.0.2 | Internal | us-west1 | Ephemeral | IPv4 | VM instance course-vm (Zone us-west1-b) | default | default |
| <input type="checkbox"/> | — | 10.138.0.17 | Internal | us-west1 | Ephemeral | IPv4 | VM instance course-vm-image-1 (Zone us-west1-a) | default | default |
| <input type="checkbox"/> | — | 10.138.0.23 | Internal | us-west1 | Ephemeral | IPv4 | VM instance gke-guestbook-default-pool-0a9eb3d6-f0mf (Zone us-west1-b) | default | default |
| <input type="checkbox"/> | — | 10.138.0.24 | Internal | us-west1 | Ephemeral | IPv4 | VM instance gke-guestbook-default-pool-0a9eb3d6-rlzz (Zone us-west1-b) | default | default |
| <input type="checkbox"/> | — <i>N</i> | <i>34.127.6.42</i> | External | us-west1 | Ephemeral | IPv4 | VM instance gke-guestbook-default-pool-0a9eb3d6-f0mf (Zone us-west1-b) | default | default |
| <input type="checkbox"/> | — <i>LB</i> | <i>34.145.24.91</i> | External | us-west1 | Ephemeral | IPv4 | Forwarding rule a6e586359e2d240ea9ca722fd63c9959 | | |
| <input type="checkbox"/> | — <i>N</i> | <i>35.199.165.224</i> | External | us-west1 | Ephemeral | IPv4 | VM instance gke-guestbook-default-pool-0a9eb3d6-rlzz (Zone us-west1-b) | default | default |

Odin srimel

NAME ubuntu-minimal

+

—

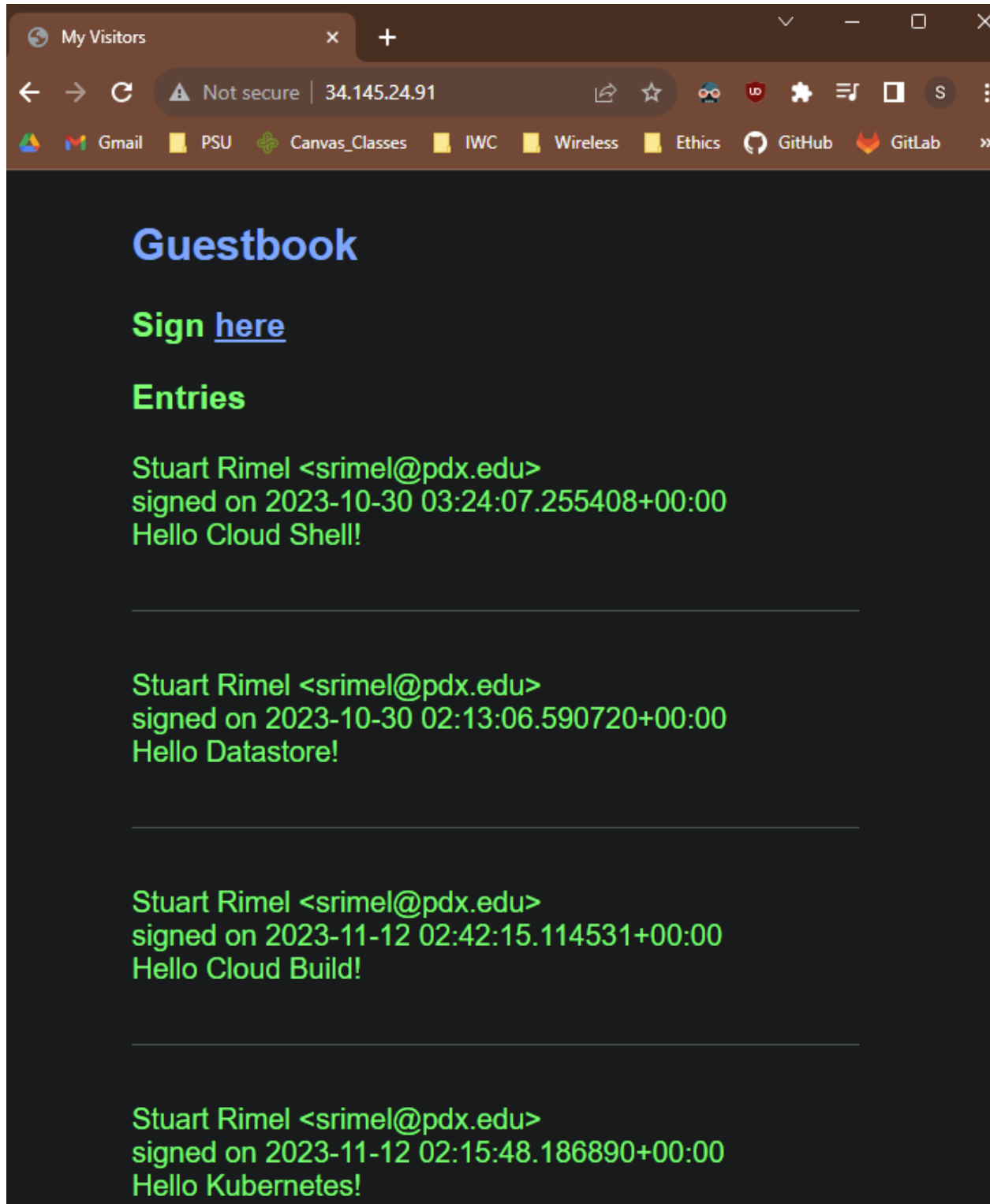
□

×

FileEditView

Odin: srimel

7.2g.12: Deploy and view the application



7.3g: APIs (Slack, Knowledge Graph)

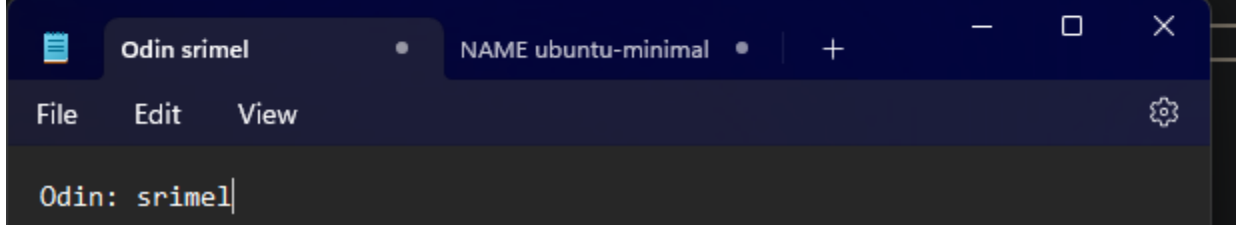
7.3g.2: Code

1. Google does not provide a python package specifically for accessing the knowledge graph API

7.3g.3: Code

```
# [START functions_slack_search]
@functions_framework.http
def kg_search(request):
    if request.method != "POST":
        return "Only POST requests are accepted", 405

    verify_signature(request)
    kg_search_response = make_search_request(request.form["text"])
    return jsonify(kg_search_response)
```



```
# [START functions_slack_request]
def make_search_request(query):
    req = kgsearch.entities().search(query=query, limit=1)
    res = req.execute()
    return format_slack_message(query, res)
```

Name of method that sends the query to Knowledge Graph API: `make_search_request`

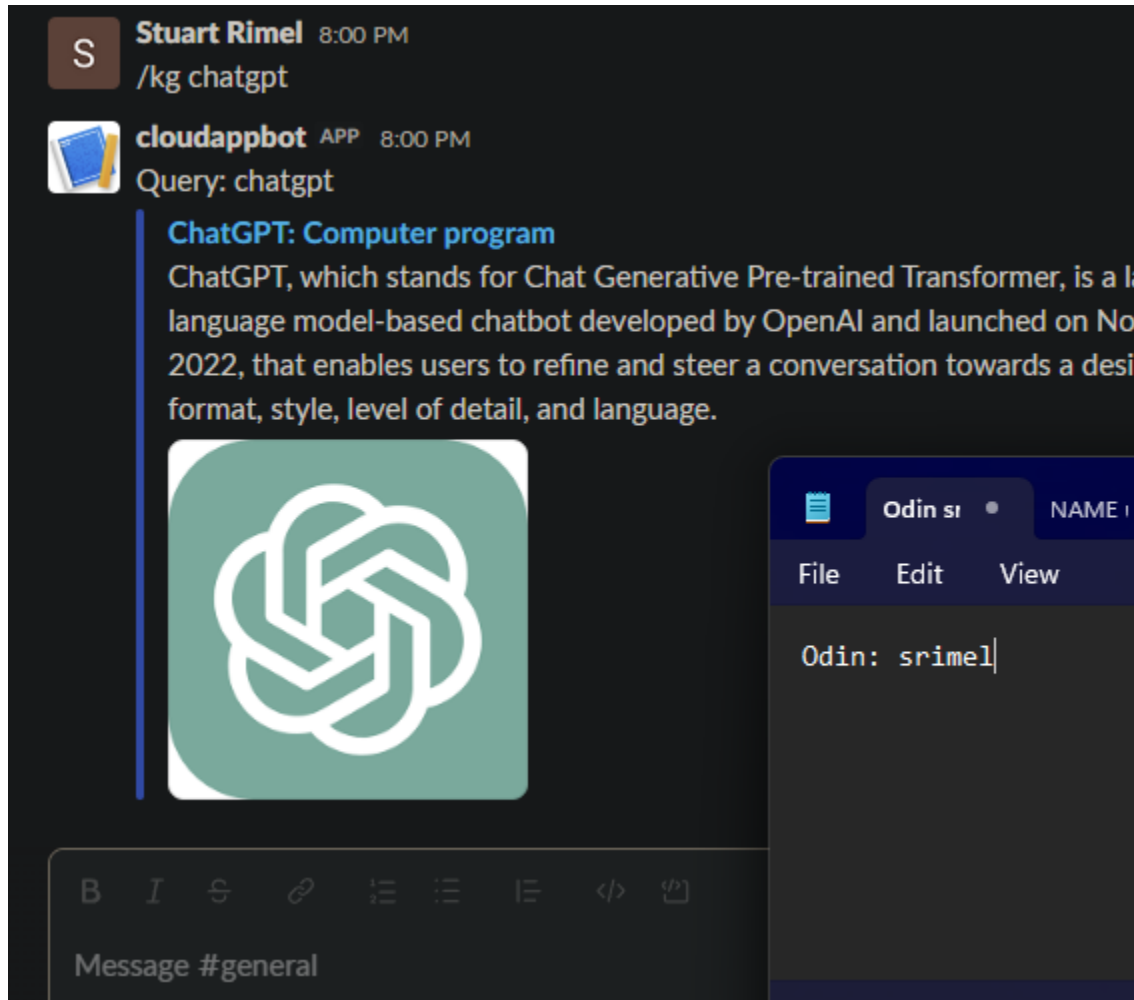
- Uses the `kgsearch` client object created from `discovery` package.

Python data type for slack message: `Dict`

Three main attributes of the formatted message passed back to Slack:

- `response_type`, `text`, `attachments`

7.3g.8: Test the command



7.4g: ML APIs

7.4g.3: Vision

```
(antenv) srimel@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-rimel-srimel)$ 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
(antenv) srimel@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-rimel-srimel)$
```

1. Name of function: detect_labels_uri

2. ImageAnnotatorClient
3. Function: label_detection
4. Attribute: label_annotations

```
(antenv) srime1@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-rimel-srime1)$ wget https://oregonstatecollege.org/sites/ogc/files/images/psu-logo.jpg -O psu_logo.jpg
--2023-11-12 05:13:20-- https://oregonstatecollege.org/sites/ogc/files/images/psu-logo.jpg
Resolving oregonstatecollege.org (oregonstatecollege.org)... 143.110.148.201
Connecting to oregonstatecollege.org (oregonstatecollege.org)[143.110.148.201]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 18501 (18K) [image/jpeg]
Saving to: 'psu_logo.jpg'

psu_logo.jpg
100%[-----] 18.07K --.-KB/s in 0s

2023-11-12 05:13:30 (171 MB/s) - 'psu_logo.jpg' saved [18501/18501]

(antenv) srime1@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-rimel-srime1)$ ls
beta_snippets.py  detect.py  psu_logo.jpg  README.txt.in  requirements.txt  set_endpoint.py  vision_async_batch_annotate_images.py  vision_batch_annotate_files_gcs.py  vision_batch_annotate_files.py
beta_snippets_test.py  detect_test.py  README.txt  requirements_test.txt  resources  set_endpoint_test.py  vision_async_batch_annotate_images_test.py  vision_batch_annotate_files_gcs_test.py  vision_batch_annotate_files_test.py
(antenv) srime1@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-rimel-srime1)$ python detect.py logos psu_logo.jpg
Logos:
Portland State University
(antenv) srime1@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-rimel-srime1)$
```

5. What method for logos: detect_logos

7.4g.4: Speech

```
(antenv) srime1@cloudshell:~/python-docs-samples/speech/snippets (cloud-rimel-srime1)$ python transcribe.py resources/audio.raw
Transcript: how old is the Brooklyn Bridge
(antenv) srime1@cloudshell:~/python-docs-samples/speech/snippets (cloud-rimel-srime1)$
```

1. Function name: transcribe_file
2. Method to perform detection: recognize
3. Attribute in response object: results

7.4g.5: Translate

```
(antenv) srime1@cloudshell:~/python-docs-samples/translate/samples/snippets (cloud-rimel-srime1)$ 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
(antenv) srime1@cloudshell:~/python-docs-samples/translate/samples/snippets (cloud-rimel-srime1)$
```

1. Name of function: translate_text
2. Name of method invoked for translation: translate
3. Attribute in response contains results: translatedText

7.4g.6: Natural Language

```
(antenv) srime1@cloudshell:~/language_api (cloud-rimel-srime1)$ python language.py 'homework is awful!'
"homework is awful!" has sentiment=-0.800000011920929

Entities are:
name: homework
(antenv) srime1@cloudshell:~/language_api (cloud-rimel-srime1)$ python language.py 'homework is ok'
"homework is ok" has sentiment=0.30000001192092896

Entities are:
name: homework
(antenv) srime1@cloudshell:~/language_api (cloud-rimel-srime1)$ python language.py 'homework is awesome?'
"homework is awesome?" has sentiment=0.4000000059604645

Entities are:
name: homework
(antenv) srime1@cloudshell:~/language_api (cloud-rimel-srime1)$ python language.py 'homework is awesome!'
"homework is awesome!" has sentiment=0.8999999761581421

Entities are:
name: homework
(antenv) srime1@cloudshell:~/language_api (cloud-rimel-srime1)$ python language.py 'The protestors in Oregon put on gas masks and wore yellow t-shirts'
"The protestors in Oregon put on gas masks and wore yellow t-shirts" has sentiment=-0.6000000238418579

Entities are:
name: protestors
name: gas masks
name: Oregon
name: t-shirts
(antenv) srime1@cloudshell:~/language_api (cloud-rimel-srime1)$
```

7.4g.8: Code

1. Function that does transcription: `transcribe_gcs`
2. Function that performs translation: `translate_text`
3. Function that performs entity analysis on the translation: `entities_text`
4. Function that performs entity analysis on the image: `detect_labels_uri`

7.4g.9: Test integration

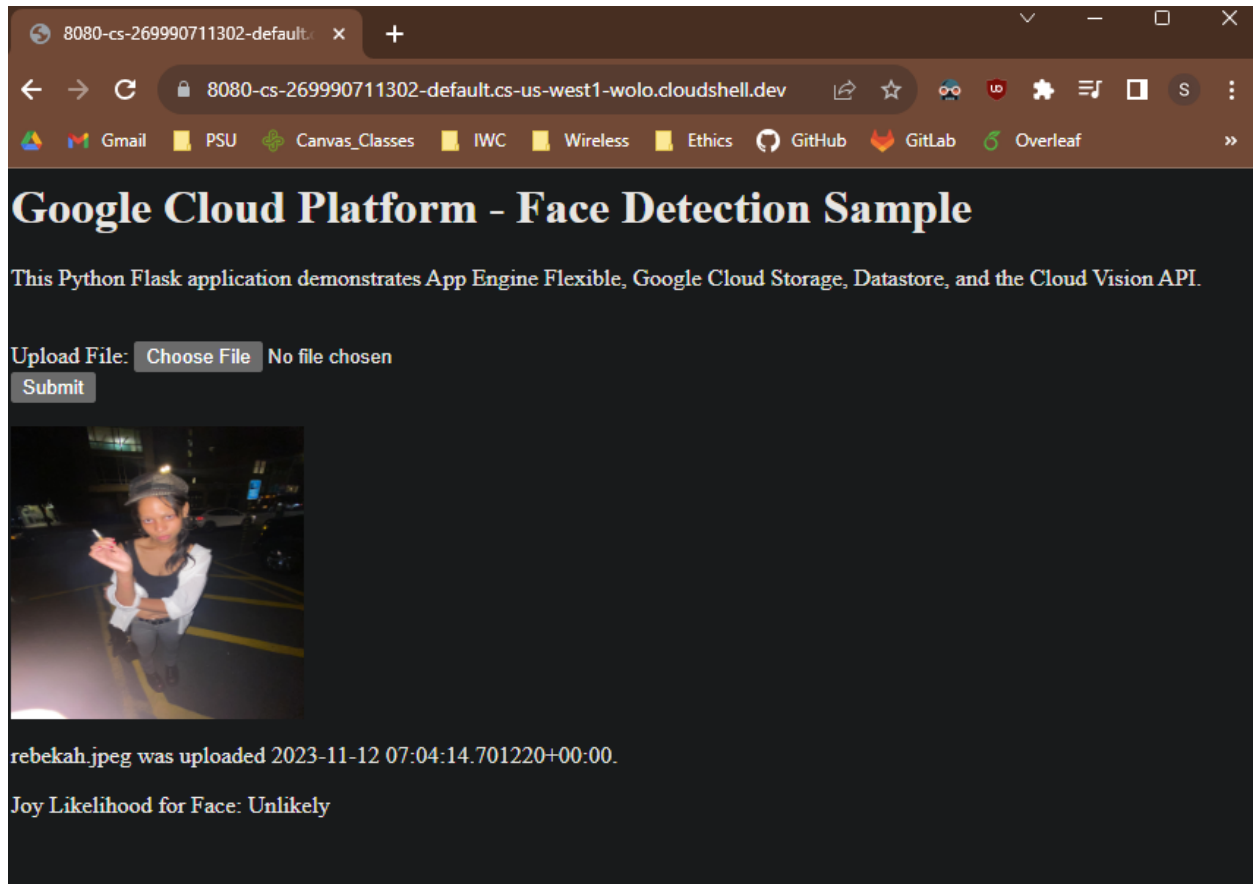
1. There seems to be an issues within the “naive check”. This is coming from an issue with the case of strings, the transcription/translation creates a lowercase ‘football’, but within the image analysis it is listed at ‘Football’. This is fixed by making the naive check case insensitive.
2. The problem seems to be that the audio transcription is translated to the short slang of bicycle ‘bike’, but that entity doesn’t exist within the image analysis. To change this you would have to do something within the image analysis to include ‘bike’ somehow.
3. The transcription returns ostriches, but the image analysis gives ostrich. The naive check once again fails and must be updated to account for pluralities.

7.4g.13: Video Intelligence

1. Three highest labels
 - a. Sports: confidence = 0.9218811392784119
 - b. Basketball: confidence = 0.9137870669364929
 - c. Player: confidence = 0.8446521162986755

2. VideoIntelligenceServiceClient
3. annotate_video

7.4g.16: Application



7.4g.17: Code

1.

```
query = datastore_client.query(kind="Faces")  
image_entities = list(query.fetch())
```
2.

```
image_entities = list(query.fetch())
```
3.

```
CLOUD_STORAGE_BUCKET = os.environ.get("CLOUD_STORAGE_BUCKET")
```
4. File?

```
photo = request.files["file"]
```

```
# Create a new blob and upload the file's content.  
blob = bucket.blob(photo.filename)  
blob.upload_from_string(photo.read(), content_type=photo.content_type)
```

5.

```
faces = vision_client.face_detection(image=image).face_annotations
```

6.

7. blob_name, image_public_url, timestamp, joy

8. Redirects to /