

Lab Week 7 — marvleon

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7.1a Terraform AWS Guestbook

7.1.4 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.

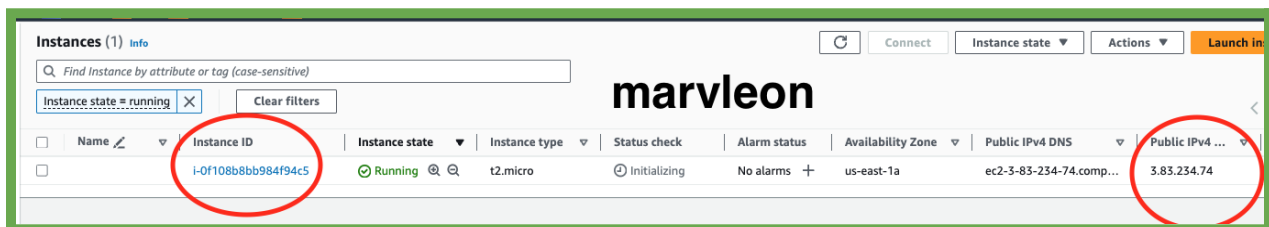
Enter a value: yes

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-0f108b8bb984f94c5]

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

Outputs:

ec2instance = "3.83.234.74"
[cloudshell-user@ip-10-6-69-68 tf]$
```



The screenshot shows the AWS Management Console 'Instances' page. The instance 'i-0f108b8bb984f94c5' is highlighted with a red circle. The public IP address '3.83.234.74' is also highlighted with a red circle.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
	i-0f108b8bb984f94c5	Running	t2.micro	Initializing	No alarms	us-east-1a	ec2-3-83-234-74.comp...	3.83.234.74

7.1.6 Adding ssh access

```
[cloudshell-user@ip-10-6-69-68 tf]$ terraform plan
aws_key_pair.kp: Refreshing state... [id=guestbook-key]
aws_security_group.sg-guestbook: Refreshing state... [id=sg-0b22c61c745fb2f6b]
aws_instance.guestbook: Refreshing state... [id=i-0d6de9e83c6613c9a]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes are needed.
[cloudshell-user@ip-10-6-69-68 tf]$ terraform apply
aws_security_group.sg-guestbook: Refreshing state... [id=sg-0b22c61c745fb2f6b]
aws_key_pair.kp: Refreshing state... [id=guestbook-key]
aws_instance.guestbook: Refreshing state... [id=i-0d6de9e83c6613c9a]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes are needed.

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

Outputs:

ec2instance = "3.93.200.146"
[cloudshell-user@ip-10-6-69-68 tf]$ ssh ubuntu@3.93.200.146
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.11.0-1021-aws x86_64)

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

System information as of Mon Nov 13 22:53:29 UTC 2023

System load:  0.0               Processes:           99
Usage of /:   18.3% of 7.69GB    Users logged in:    0
Memory usage: 20%              IPv4 address for eth0: 172.31.27.70
Swap usage:   0%

1 update can be applied immediately.
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
New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Nov 13 22:51:06 2023 from 3.228.218.149
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-27-70:~$
```

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7.1.7 Adding the Guestbook application

```
Plan: 3 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_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-09e03857c33a38bc2]
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-0a6f49db17f5c2168]

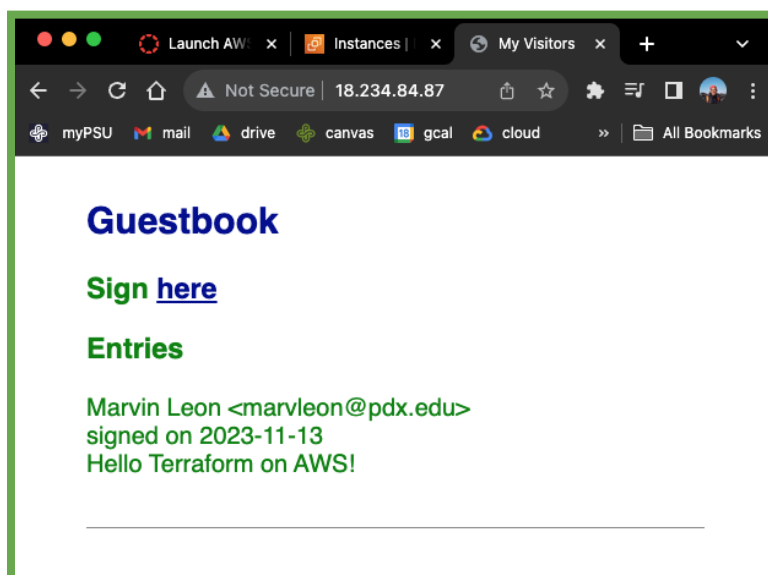
Apply complete! Resources: 3 added, 0 changed, 0 destroyed.

Outputs:

ec2instance = "18.234.84.87"
[cloudshell-user@ip-10-6-69-68 tf]$
```

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7.1.8 View the guestbook



7.1g Terraform GCP Guestbook

7.1.4 Launching configuration

VM instances				
Filter Enter property name or value				marvleon
<input type="checkbox"/>	Status ↑	Name ↑	Zone	Internal IP
<input type="checkbox"/>	✓	tf-lab-vm	us-west1-b	10.138.0.12 (nic0)

7.1.5 Adding an external IP address

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

Changes to Outputs:
  + ip = (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

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

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

Outputs:
ip = "34.168.129.197"
marvleon@cloudshell:~/tf (cloud-leon-marvleon)$
```

VM instances					
Filter Enter property name or value					marvleon
<input type="checkbox"/>	Status ↑	Name	Zone	Internal IP	External IP
<input type="checkbox"/>	✓	tf-lab-vm	us-west1-b	10.138.0.12 (nic0)	34.168.129.197 (nic0)

7.1.6 Adding ssh access

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

Outputs:

ip = "34.168.129.197"
marvleon@cloudshell:~/tf (cloud-leon-marvleon)$ !ss
ssh 34.168.129.197
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1046-gcp x86_64)

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

System information as of Tue Nov 14 03:47:39 UTC 2023

System load:  0.0               Processes:            101
Usage of /:   19.5% of 9.51GB   Users logged in:     0
Memory usage: 5%               IPv4 address for ens4: 10.138.0.12
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

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.

marvleon@tf-lab-vm:~$
```

7.1.7 Adding the Guestbook application

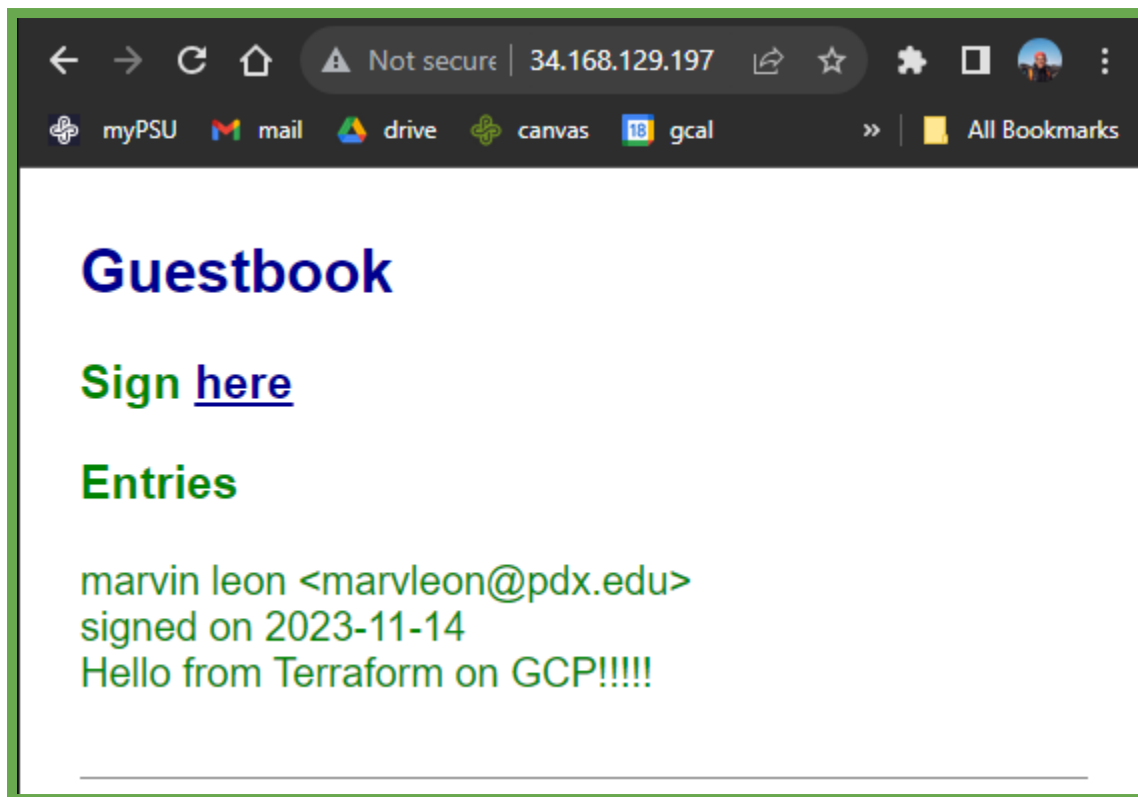
What resources are being added, changed, or destroyed?

Google Compute Instance

What part of the configuration forces a replacement to occur?

the addition of metadata startup script forces replacement

7.1.8 View the Guestbook



7.2g Kubernetes Guestbook

7.2.4 Create Kubernetes cluster

What is the name of the Instance Template dynamically generated to create the two nodes (VMs)?

gke-guestbook-default-pool-b0f0be9f

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

gke-guestbook-default-pool-b0f0be9f-grp

What are the names of the two nodes?

gke-guestbook-default-pool-b0f0be9f-2kwp


gke-guestbook-default-pool-b0f0be9f-7329

7.2.5 Prepare a container image

gcp_gb

gcr.io > cloud-leon-marvleon > gcp_gb

Filter Enter property name or value

<input type="checkbox"/>	Name	Tags	Virtual Size	Created	Uploaded
<input type="checkbox"/>	 98bec09eae2e	latest	1.1 GB	6 minutes ago	2 minutes ago

7.2.7 Deploy the configuration

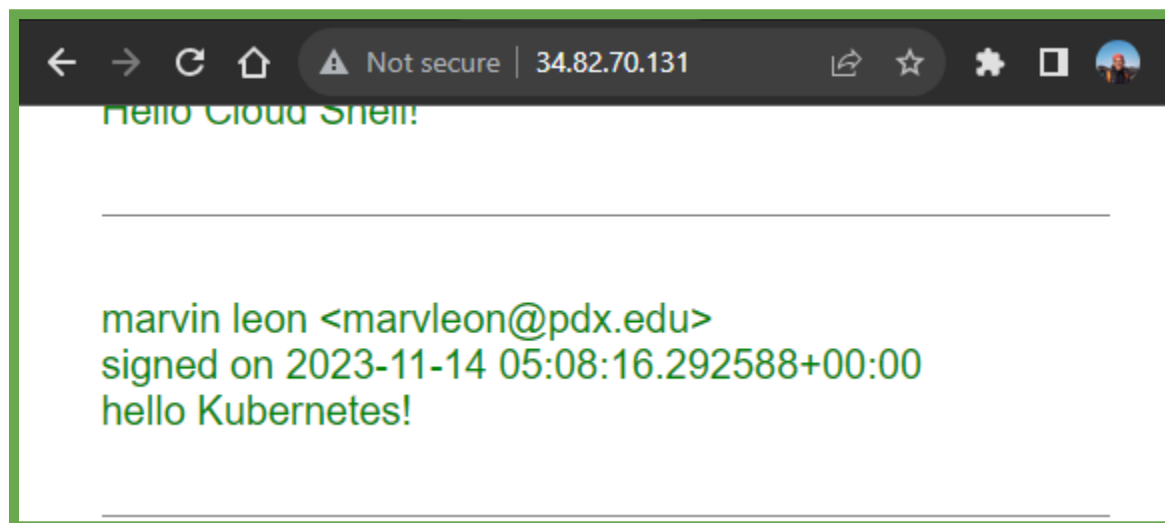
```
marvleon@cloudshell:~/code/cs430-src/05_gcp_datastore (cloud-leon-marvleon)$ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
guestbook-replicas-5wxtc	1/1	Running	0	5m25s
guestbook-replicas-j967x	1/1	Running	0	5m25s
guestbook-replicas-lrsgp	1/1	Running	0	5m25s

```
marvleon@cloudshell:~/code/cs430-src/05_gcp_datastore (cloud-leon-marvleon)$ kubectl get services
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
guestbook-lb	LoadBalancer	10.20.5.104	34.82.70.131	80:32400/TCP	6m34s
kubernetes	ClusterIP	10.20.0.1	<none>	443/TCP	44m

7.2.8 View the Guestbook



cloud-Leon-marvleon

kuberne

Replication Co...

REFRESH

EDIT

DELETE

ACTIONS

Managed pods

Name	Status	Restarts	Created on ↑
guestbook-replicas-j967x	Running	0	Nov 13, 2023, 9:00:17 PM
guestbook-replicas-lrsgp	Running	0	Nov 13, 2023, 9:00:17 PM
guestbook-replicas-5wxtc	Running	0	Nov 13, 2023, 9:00:17 PM

Exposing services ?

Name ↑	Type	Endpoints
guestbook-lb	Load balancer	34.82.70.131:80

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kuberne

Service details

REFRESH

EDIT

DELETE

KUBECTL

✓ guestbook-lb

OVERVIEWDETAILSEVENTSLOGSAPP ERRORSYAML

Cluster

[guestbook](#)

Namespace

default

Created

Nov 13, 2023, 9:00:16 PM

Labels

app: guestbooktier: frontend

Annotations

cloud.google.com/neg: {"ingress":true}

Label selector

app = guestbooktier = frontend

Pods

3 current / 3 desired

Type

LoadBalancer

External endpoints

[34.82.70.131:80](#)

Load Balancer

Cluster IP

10.20.5.104

Load balancer IP

34.82.70.131

Load balancer

[aba303c7bb65a4a36851121b6f79900a](#)

IP addresses

RESERVE EXTERNAL STATIC IP ADDRESS

RESERVE INTERNAL STATIC IP ADDRESS

REFRESH

RELEASE STATIC ADDRESS

ALL

INTERNAL IP ADDRESSES

EXTERNAL IP ADDRESSES

IPV4 ADDRESSES

IPV6 ADDRESSES

Filter

In use by : gke-guestbook

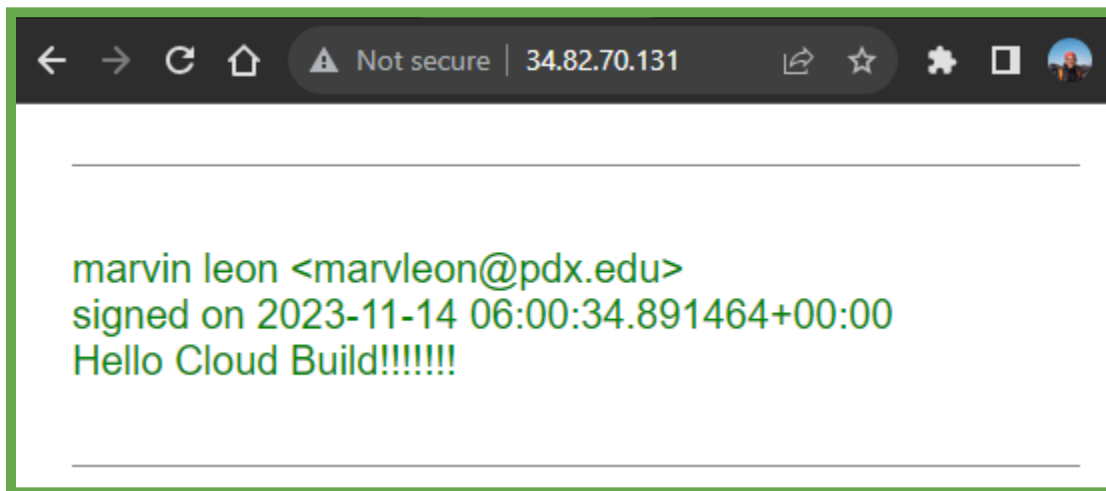
Enter property name or value

marvleon

<input type="checkbox"/>	Name	IP address	Access type	Region	Type	Version	In use by ↓	Subnetwork	VPC Network	Network Tier ?
<input type="checkbox"/>	—	34.83.248.88	External	us-west1	Ephemeral	IPv4	VM instance gke-guestbook-default-pool-b0f0be9f-7329 (Zone us-west1-b)	default	default	Premium
<input type="checkbox"/>	—	10.138.0.15	Internal	us-west1	Ephemeral	IPv4	VM instance gke-guestbook-default-pool-b0f0be9f-7329 (Zone us-west1-b)	default	default	
<input type="checkbox"/>	—	34.168.129.197	External	us-west1	Ephemeral	IPv4	VM instance gke-guestbook-default-pool-b0f0be9f-2kwp (Zone us-west1-b)	default	default	Premium
<input type="checkbox"/>	—	10.138.0.16	Internal	us-west1	Ephemeral	IPv4	VM instance gke-guestbook-default-pool-b0f0be9f-2kwp (Zone us-west1-b)	default	default	

34.83.248.88 and 34.168.129.197 are associated with the load balancer
10138.0.15 and 10.138.0.16 are associated with the nodes

7.2.12 Deploy and view application



7.3g APIs (Slack Knowledge Graph)

7.3.2 Code

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

Yes

7.3.3 Code

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

```
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?

```
res = req.execute()
```

execute is the method that sends the query

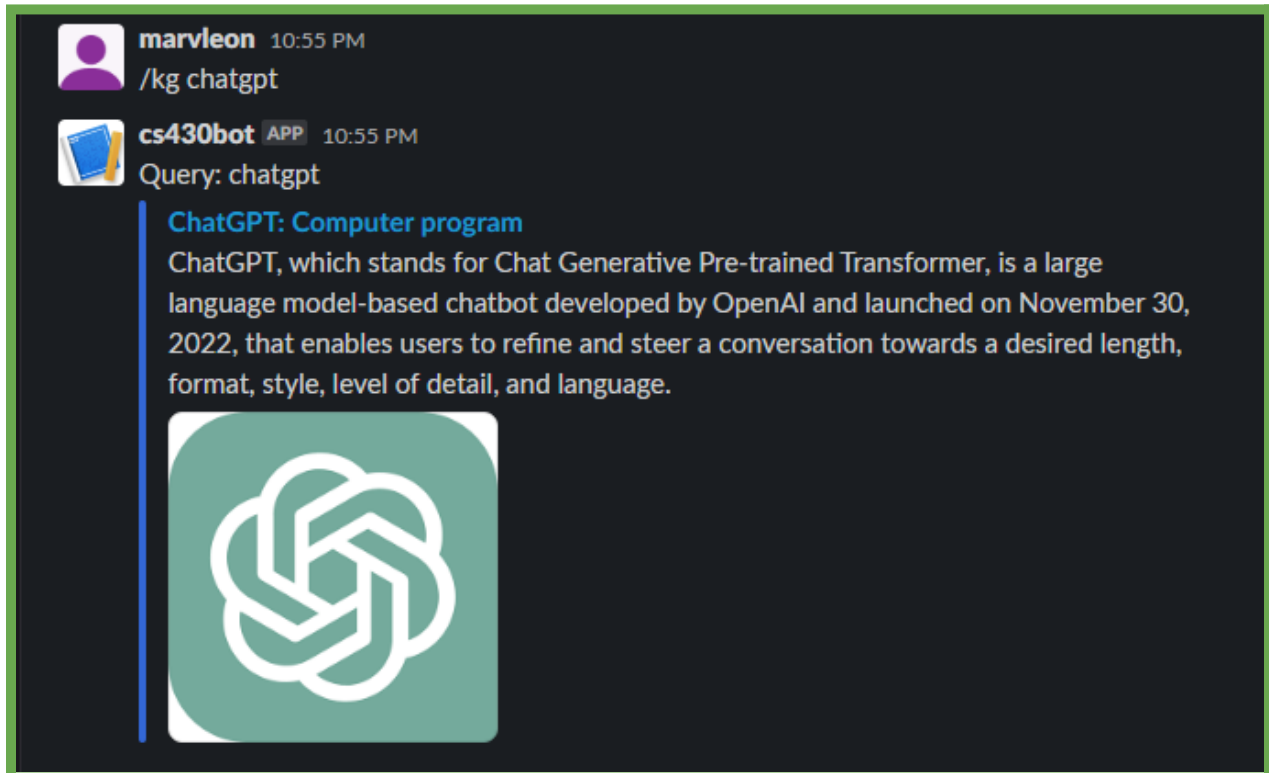
What is the Python data type that is used to represent the formatted message?

Dictionary

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

response_type, text, attachments

7.3.8 Test the command



7.4g ML APIs

7.4.3 Vision

```
(env) marvleon@cloudshell:~/code/python-docs-samples/vision/snippets/detect (cloud-leon-marvleon) $ 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
```

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?

`label_detection()`

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

`label_annotations`

```
(env) marvleon@cloudshell:~/code/python-docs-samples/vision/snippets/detect (cloud-leon-marvleon)$ wget https://dxbhsrqyrr690.cloudfront.net/sidearm.nextgen.sites/pdx.sidearmsports.com/images/2016/5/19/newlogooldsite.jpg -O image_of_a_logo.jpg
--2023-11-14 07:14:44-- https://dxbhsrqyrr690.cloudfront.net/sidearm.nextgen.sites/pdx.sidearmsports.com/images/2016/5/19/newlogooldsite.jpg
Resolving dxbhsrqyrr690.cloudfront.net (dxbhsrqyrr690.cloudfront.net)... 18.65.227.115, 18.65.227.12, 18.65.227.171, ...
Connecting to dxbhsrqyrr690.cloudfront.net (dxbhsrqyrr690.cloudfront.net)|18.65.227.115|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 58129 (57K) [image/jpeg]
Saving to: 'image_of_a_logo.jpg'

image_of_a_logo.jpg          100%[=====>] 56.7
7K --.-KB/s   in 0.006s

2023-11-14 07:14:44 (9.11 MB/s) - 'image_of_a_logo.jpg' saved [58129/58129]

(env) marvleon@cloudshell:~/code/python-docs-samples/vision/snippets/detect (cloud-leon-marvleon)$ python detect.py logos image_of_a_logo.jpg
Logos:
Portland State University
```

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

`logo_detection()`

7.4.4 Speech

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

What is the name of the function?

`transcribe_file()`

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

`recognize()`

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

`results`

7.4.5 Translate

```
(env) marvleon@cloudshell:~/code/python-docs-samples/translate/samples/snippets (cloud-leon-marvleon)$ 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
```

What is the name of the function?

translate_text()

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

translate()

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

translatedText

7.4.6 Natural Language

```
(env) marvleon@cloudshell:~/code/natural-language (cloud-leon-marvleon)$ python language.py 'homework is awful!'
"homework is awful!" has sentiment=-0.800000011920929

Entities are:
name: homework
(env) marvleon@cloudshell:~/code/natural-language (cloud-leon-marvleon)$ python language.py 'homework is ok'
"homework is ok" has sentiment=0.30000001192092896

Entities are:
name: homework
(env) marvleon@cloudshell:~/code/natural-language (cloud-leon-marvleon)$ python language.py 'homework is awesome?'
"homework is awesome?" has sentiment=0.4000000059604645

Entities are:
name: homework
(env) marvleon@cloudshell:~/code/natural-language (cloud-leon-marvleon)$ python language.py 'homework is awesome!'
"homework is awesome!" has sentiment=0.8999999761581421

Entities are:
name: homework
(env) marvleon@cloudshell:~/code/natural-language (cloud-leon-marvleon)$ 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
```

7.4.8 ML APIs

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()

7.4.9 Test integration

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

7.4.13 Video Intelligence

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?

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

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

7.4.16 Application

7.4.17 Code

What line of code creates the query for previous detections?

What line of code sends the query to Cloud Datastore?

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

What form field is used to specify the uploaded photo?

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

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

What fields are stored in Cloud Datastore for each image?

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