Week#8 Labs

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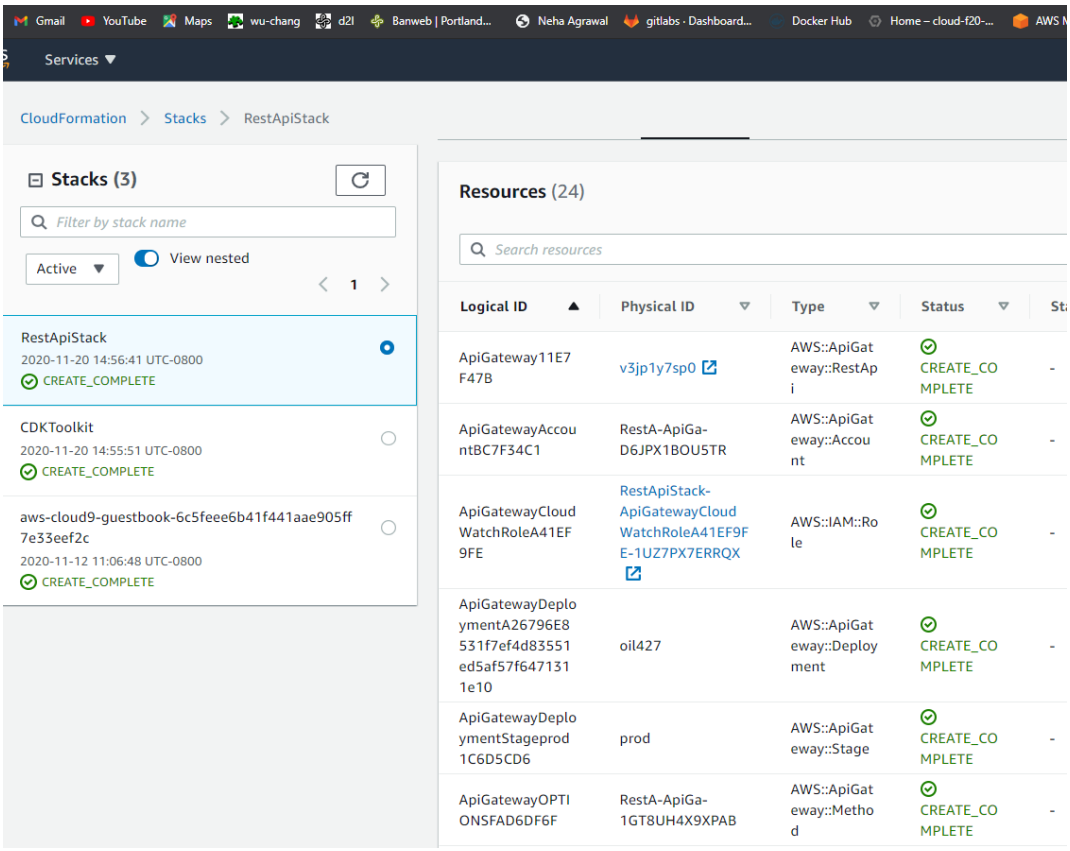
Table of Contents

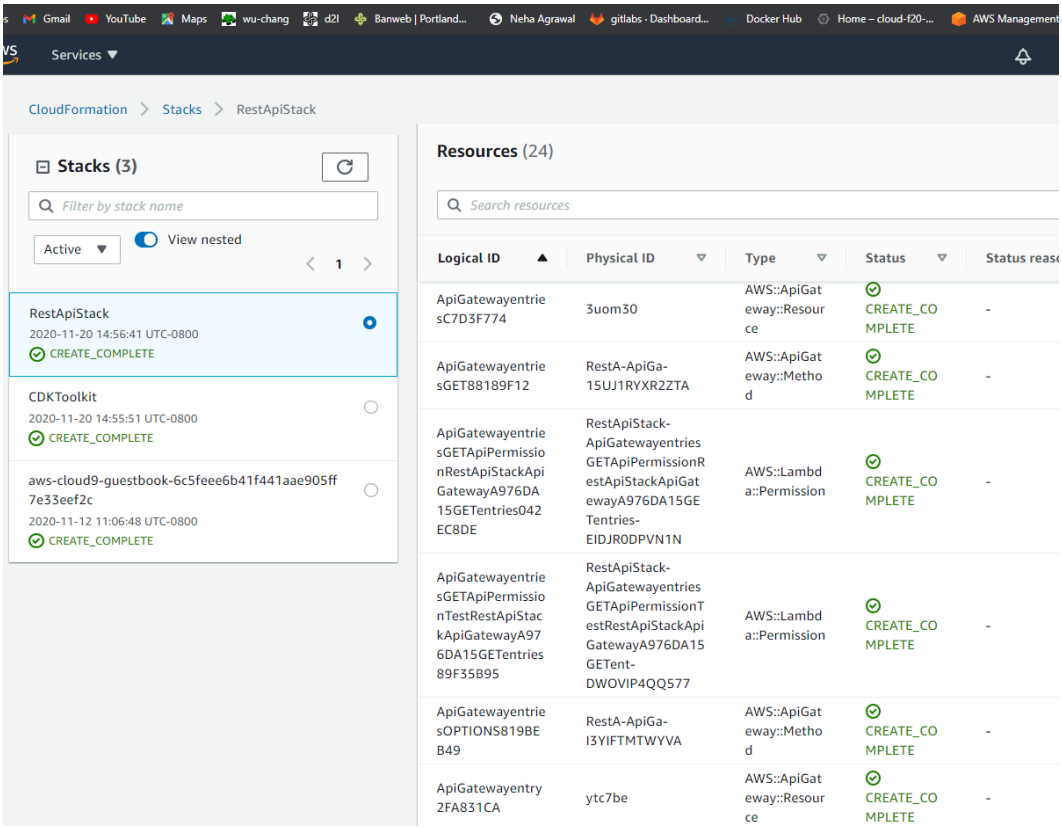
08.2a: CDK Guestbook

1. Overview

2. CDK code to deploy backend

- **Find the RestApiStack and take a screenshot of the resources that were deployed. This may take a couple of screenshots. Take as many as needed.**




Gmail YouTube Maps wu-chang d2l Banweb | Portland... Neha Agrawal gitlabs · Dashboard... Docker Hub Home – cloud-f20-... AWS Management
Services
CloudFormation > Stacks > RestApiStack
Stacks (3)
Filter by stack name
Active
View nested
1
RestApiStack
2020-11-20 14:56:41 UTC-0800
CREATE_COMPLETE
CDKToolkit
2020-11-20 14:55:51 UTC-0800
CREATE_COMPLETE
aws-cloud9-guestbook-6c5feee6b41f441aae905ff7e33eef2c
2020-11-12 11:06:48 UTC-0800
CREATE_COMPLETE
Resources (24)
Search resources
Logical ID
Physical ID
Type
Status
Status reas
ApiGatewayentriesC7D3F774
3uom30
AWS::ApiGateway::Resource
CREATE_COMPLETE
-
ApiGatewayentriesGET88189F12
RestA-ApiGa-15UJ1RYXR2ZTA
AWS::ApiGateway::Method
CREATE_COMPLETE
-
ApiGatewayentriesGETApiPermissionRestApiStackApiGatewayA976DA15GETentries042EC8DE
RestApiStack-ApiGatewayentriesGETApiPermissionRestApiStackApiGatewayA976DA15GETentries-EIDJR0DPVN1N
AWS::Lambda::Permission
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RestApiStack-ApiGatewayentriesGETApiPermissionTestRestApiStackApiGatewayA976DA15GETent-DWOVIP4QQ577
AWS::Lambda::Permission
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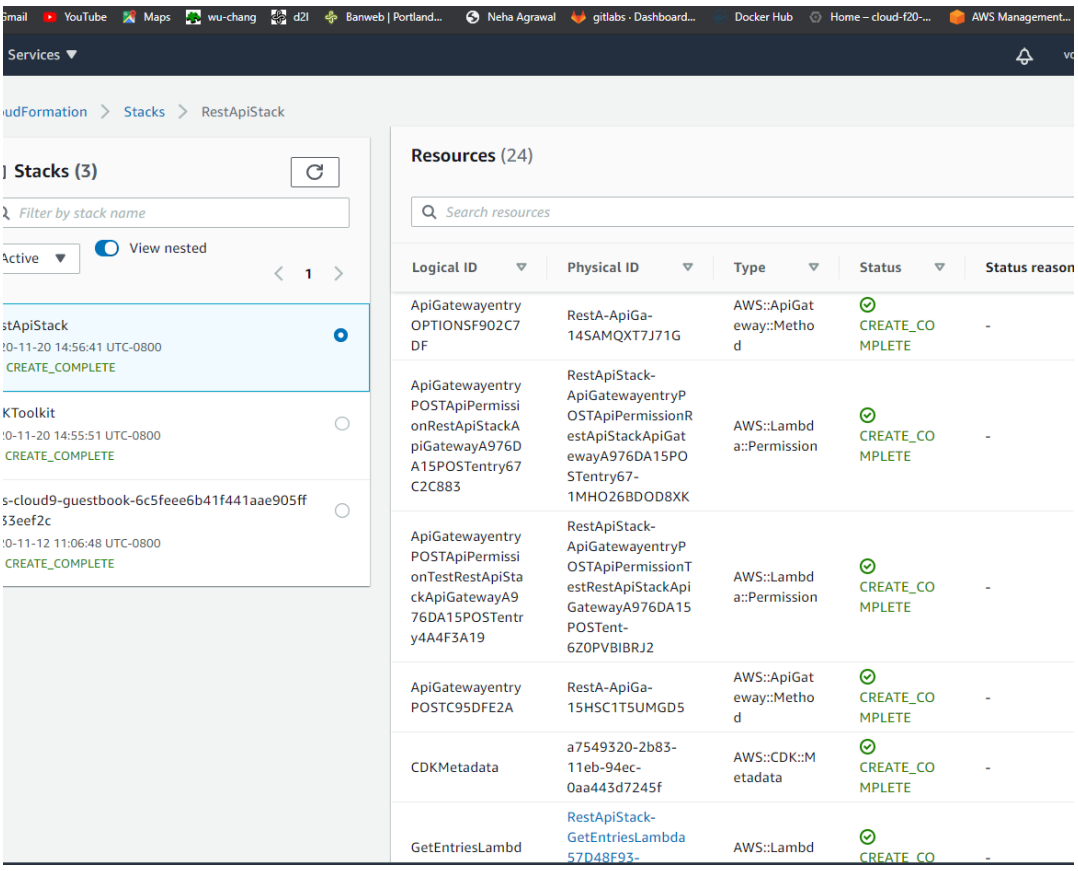
RestA-ApiGa-I3YIFTMTWYVA
AWS::ApiGateway::Method
CREATE_COMPLETE
-
ApiGatewayentry2FA831CA
ytc7be
AWS::ApiGateway::Resource
CREATE_COMPLETE
-


Services
udFormation > Stacks > RestApiStack
Stacks (3)
Filter by stack name
Active
View nested
1
stApiStack
20-11-20 14:56:41 UTC-0800
CREATE_COMPLETE
KToolkit
20-11-20 14:55:51 UTC-0800
CREATE_COMPLETE
s-cloud9-guestbook-6c5feee6b41f441aae905ff33eef2c
20-11-12 11:06:48 UTC-0800
CREATE_COMPLETE
Resources (24)
Search resources
Logical ID
Physical ID
Type
Status
Status reason
ApiGatewayentryOPTIONSF902C7DF
RestA-ApiGa-14SAMQXT7J71G
AWS::ApiGateway::Method
CREATE_COMPLETE
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ApiGatewayentryPOSTApiPermissionRestApiStackApiGatewayA976DA15POSTentry67C2C883
RestApiStack-ApiGatewayentryPOSTApiPermissionRestApiStackApiGatewayA976DA15POSTentry67-1MHO26BDOD8XK
AWS::Lambda::Permission
CREATE_COMPLETE
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ApiGatewayentryPOSTApiPermissionTestRestApiStackApiGatewayA976DA15POSTentry4A4F3A19
RestApiStack-ApiGatewayentryPOSTApiPermissionTestRestApiStackApiGatewayA976DA15POSTent-6Z0PVBIBRJ2
AWS::Lambda::Permission
CREATE_COMPLETE
-
ApiGatewayentryPOSTC95DFE2A
RestA-ApiGa-15HSC1T5UMGD5
AWS::ApiGateway::Method
CREATE_COMPLETE
-
CDKMetadata
a7549320-2b83-11eb-94ec-0aa443d7245f
AWS::CDK::Metadata
CREATE_COMPLETE
-
GetEntriesLambd
RestApiStack-GetEntriesLambda57D48F93-
AWS::Lambd
CREATE_CO
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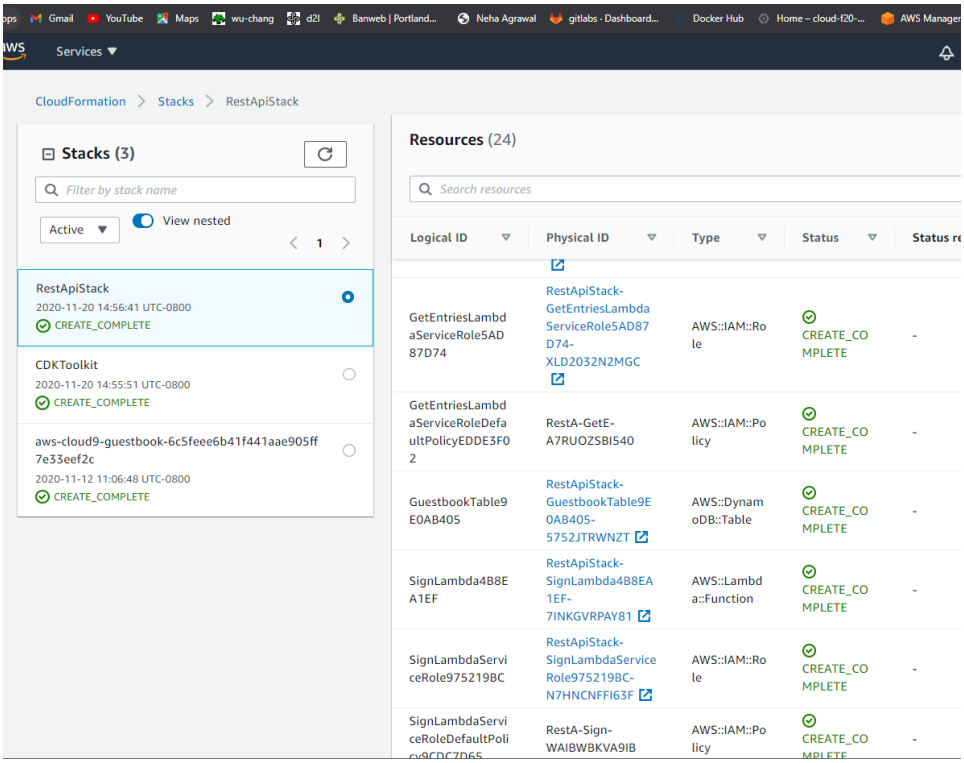


3. Deploy the API

4. Frontend Code

5. Configure and Deploy the Frontend

6. Clean up

08.2g: Deployment Manager Guestbook

1. Deployment Manager

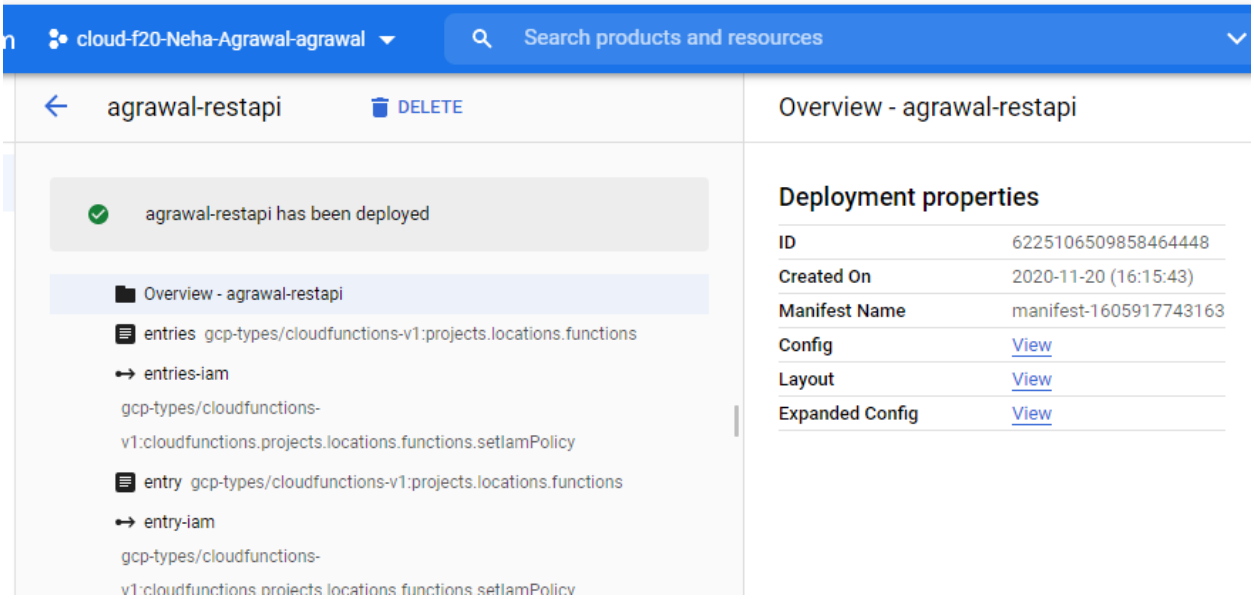
2. Deployment Manager code for REST API backend (1)

3. Deployment Manager code for REST API backend (2)

4. Set up deployment service account

5. Deploy the REST API

When the deployment is complete (after about 5 minutes), take a screenshot of its success as below:

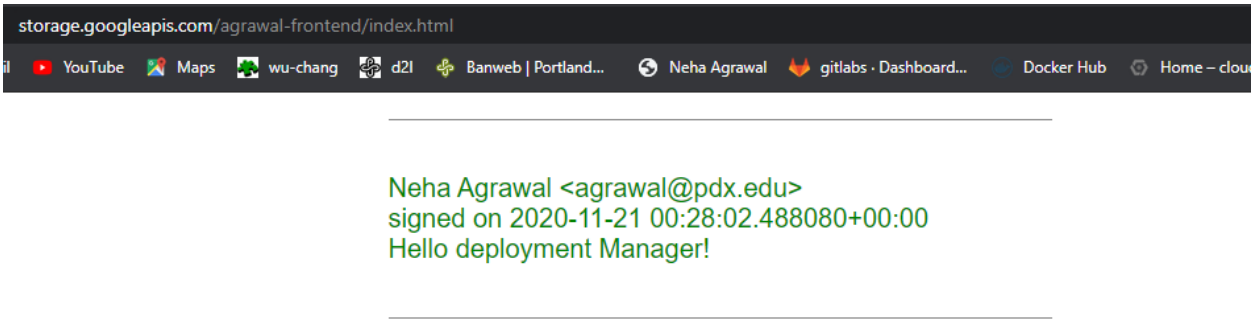


Finally, visit the web console for Cloud Functions and take a screenshot that includes the two functions that were created in the deployment.

6. Deployment Manager code for frontend

7. Deploy the frontend

Take a screenshot as before that shows your entry and the static website hosting URL



8. Clean up

08.3g: ML APIs

1. APIs #1 (Vision, Speech, Translate, Natural Language APIs)

2. IAM service account setup

3. Vision

Answer the following questions:

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

  `detect_labels_uri`
- **What type of Vision client is instantiated in it?**

  `vision.ImageAnnotatorClient()`
- **What method is invoked in the Vision client to perform the detection?**

  label_detection(image=image)
- **What is the name of the attribute in the response object that contains the results we seek?**

  `label_annotations`
- **Take a screenshot of the output for the above commands**

```
(env) agrawal@cloudshell:~/python-vision/samples/snippets/detect (cloud-f20-neha-agrawal-agrawal)$ wget https://i.pinimg.com/736x/03/41/ec/0341ec6e7c699b0c270897a8aa5f3331
pg -O psulogo
--2020-11-21 02:27:27--  https://i.pinimg.com/736x/03/41/ec/0341ec6e7c699b0c270897a8aa5f3331.jpg
Resolving i.pinimg.com (i.pinimg.com)... 151.101.40.84, 2a04:4e42:a::84
Connecting to i.pinimg.com (i.pinimg.com)|151.101.40.84|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 12481 (12K) [image/jpeg]
Saving to: 'psulogo'

psulogo                                   100%[=======================================================================================>]  12.19K  --.-KB/s    in 0.001s

2020-11-21 02:27:27 (20.4 MB/s) - 'psulogo' saved [12481/12481]

(env) agrawal@cloudshell:~/python-vision/samples/snippets/detect (cloud-f20-neha-agrawal-agrawal)$ python detect.py logos psulogo
Logos:
Portland State University
(env) agrawal@cloudshell:~/python-vision/samples/snippets/detect (cloud-f20-neha-agrawal-agrawal)$
```

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

  logo_detection(image=image)

4. Speech

- **Show the output for your lab notebook**

```
(env) agrawal@cloudshell:~/python-speech/samples/snippets (cloud-f20-neha-agrawal-agrawal)$ python transcribe.py resources/audio.raw
Transcript: how old is the Brooklyn Bridge
```

Open up transcribe.py. Given the arguments of the above command, find the function that is called which handles this particular translation.

Answer the following questions:

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

  `transcribe_file`

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

  `recognize(config=config, audio=audio)`

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

  `response.results`

5. Translate

- **Show the output for your lab notebook**

```
(env) agrawal@cloudshell:~/python-translate/samples/snippets (cloud-f20-neha-agrawal-agrawal)$ 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 jacket
Detected source language: zh-TW
```

Open up snippets.py. Given the arguments of the above command, find the function that is called which handles this particular translation.

Answer the following questions:

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

  `translate_text`

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

  ```
  translate(text, target_language=target)
  ```

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

  ```
  result["input"],
  result["translatedText"]
  result["detectedSourceLanguage"]
  ```

6. Natural Language

- **Show the output for your lab notebook**

```
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$ python language.py 'homework is awful!'
"homework is awful!" has sentiment=-0.800000011920929

Entities are:
name: homework
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$ python language.py 'homework is ok'
"homework is ok" has sentiment=0.30000001192092896

Entities are:
name: homework
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$ python language.py 'homework is awesome?'
"homework is awesome?" has sentiment=0.4000000059604645

Entities are:
name: homework
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$ python language.py 'homework is awesome!'
"homework is awesome!" has sentiment=0.8999999761581421

Entities are:
name: homework
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$ 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
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$
```

7. Integration

8. Code

Examine the code and answer the following questions:

- **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. Test integration

```
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$ python solution.py de-DE gs://ml-api-codelab/de-ball.wav gs://ml-api-codelab/football.jpg
Transcription: willst du mit uns Fußball spielen
Translation: do you want to play soccer with us?
Entities: ['soccer']
Image labels: ['Soccer ball', 'Ball', 'Football', 'Rugby ball', 'Pallone', 'Sports equipment', 'Grass', 'Soccer', 'Competition event', 'Team sport']
The audio and image do not appear to be related.
```

Should do case-insensitive comparison

```
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$ python solution.py tr-TR gs://ml-api-codelab/tr-bike.wav gs://ml-api-codelab/bicycle.jpg
Transcription: bisikletimi sokağa bırak
Translation: leave my bike on the street
Entities: ['bike', 'street']
Image labels: ['Bicycle', 'Bicycle wheel', 'Bicycle part', 'Bicycle drivetrain part', 'Bicycle frame', 'Bicycle accessory', 'Vehicle', 'Bicycle handlebar', 'Photograph', 'Bicycle tire']
The audio and image do not appear to be related.
```

Should check for the different names of the same object.

```
The audio and image do not appear to be related.
(env) agrawal@cloudshell:~ (cloud-f20-neha-agrawal-agrawal)$ python solution.py tr-TR gs://ml-api-codelab/tr-ostrich.wav gs://ml-api-codelab/birds.jpg
Transcription: çok fazla deve kuşu var
Translation: there are too many ostriches
Entities: ['ostriches']
Image labels: ['Ostrich', 'Ratite', 'Flightless bird', 'Bird', 'Vertebrate', 'Emu', 'Greater rhea', 'Beak', 'Adaptation', 'Terrestrial animal']
The audio and image do not appear to be related.
```

Should convert the plural to single or vice versa.

10. APIs #2 (Video Intelligence API)

11. Video setup

12. Video Intelligence labeling script

13. Video Intelligence

Answer the following for your lab notebook.

- **What are the top 3 labels that the Video Intelligence API associates with the video and what is its confidence in them?**

  Video label description: basketball, Confidence: 0.9137870669364929

  Video label description: crowd, Confidence: 0.3974151611328125

  Video label description: ice hockey, Confidence: 0.42565470933914185

Open up `labels.py`. Answer the following questions:

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

  `VideoIntelligenceServiceClient`

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

  `annotate_video(input_uri=path, features=features)`

14. APIs #3 (Web site integration)

15. IAM service account setup

16. Application

17. Code

Open `main.py` and view the code for the default route. Answer the following questions:

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

  Line 39: `query = datastore_client.query(kind="Faces")`
- **What line of code sends the query to Cloud Datastore?**

  Line 39: `query = datastore_client.query(kind="Faces")`

Then, view the `upload_photo` route.

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

  `Line 54: bucket = storage_client.get_bucket(CLOUD_STORAGE_BUCKET)`
- **What form field is used to specify the uploaded photo?**

  `files["file"]`
- **Show the line that copies the photo's contents to the storage bucket.**

Line 58:
`blob.upload_from_string(photo.read(), content_type=photo.content_type)`

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

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

  Blob.name, blob.public_url, current_datetime, face_joy
- **What happens at the end of the `upload_photo` route?**

  Redirected to the home page

18. Clean up

08.4g: Firebase

1. Firebase web application

2. Project setup

3. Application setup

4. Authentication setup

- **What other domains are given access to this Firebase project by default?**

  Localhost, fir-agrawal-296306.firebaseapp.com, fir-agrawal-296306.web.app

5. Database setup

6. Storage setup

7. CLI setup

8. HTML code

Answer the following for your lab notebook:

- **Which version of Firebase does this application use?**

  7.24.0

9. Test application

Answer the following questions:

- **What are the values for `databaseURL`, `storageBucket`, and `authDomain` that the client application is configured with?**

```
"databaseURL": "https://fir-agrawal-296306.firebaseio.com",
"storageBucket": "firebase-agrawal-296306.appspot.com",
 "authDomain": "fir-agrawal-296306.firebaseapp.com",
```

10. Add authentication

View the code and answer the following questions for your lab notebook:

- **What missing functions deal with user authentication?**

```
function signIn()
```

- **What missing functions deal with sending and receiving messages?**

```
onMessageFormSubmit
loadMessages
```

11. Update UI

Answer the following questions:

- **What are the names of the elements that are hidden when the user is signed out?**

  userNameElement, userPicElement, signOutElement
- **What is the name of the element that is not hidden when the user is signed out?**

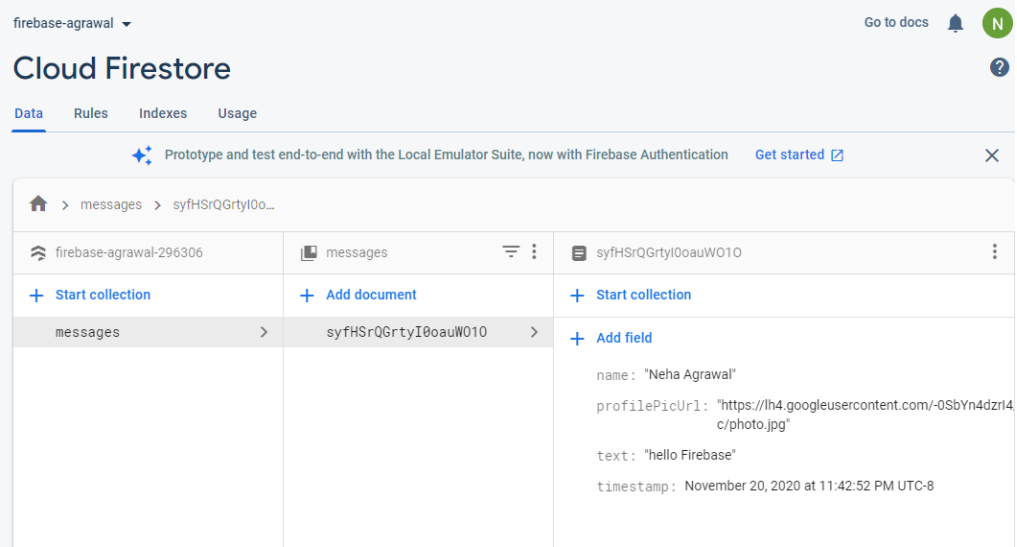
```
signInButtonElement
```

12. Test application with authentication

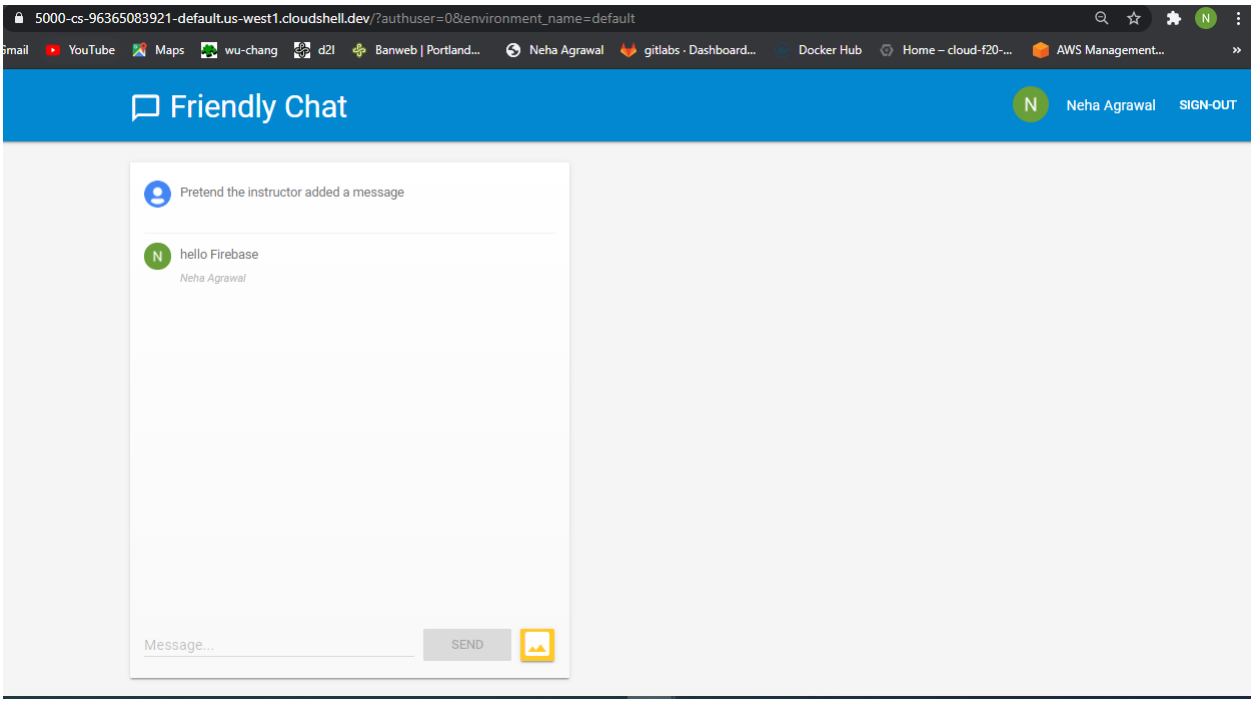
13. Add text messaging

14. Test application with text messaging

- **Include a screenshot of the message and its fields in the database for your lab notebook**



15. Manual message insertion

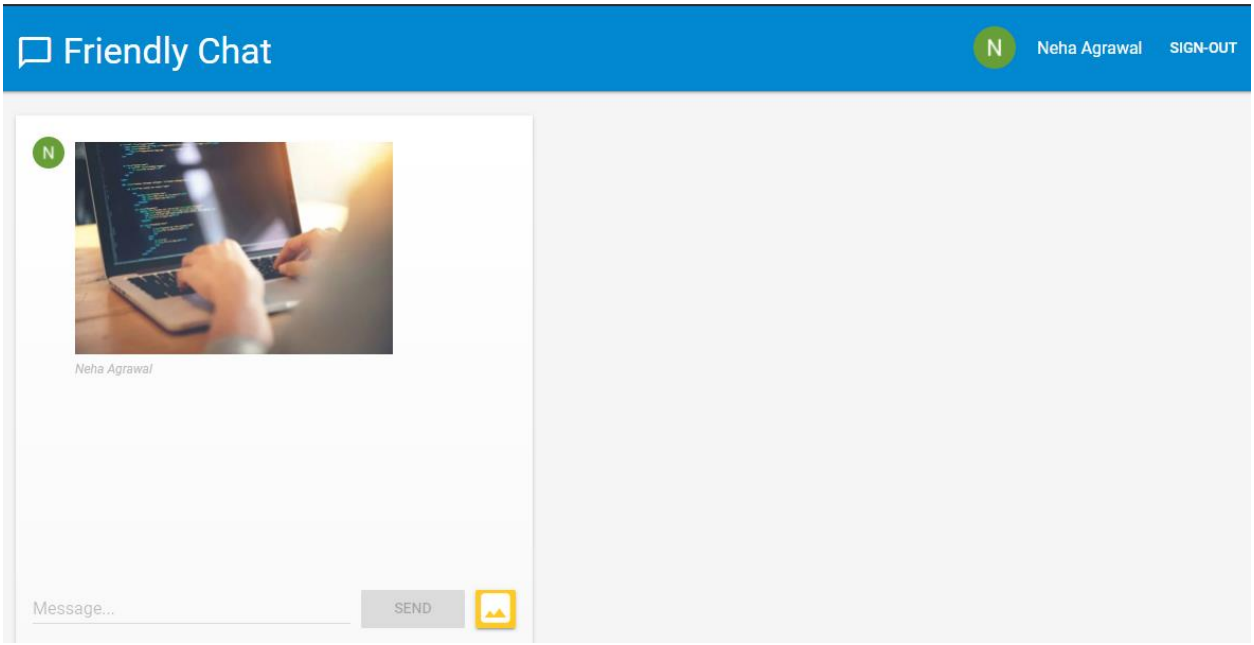


16. Add image messaging

In examining the code, answer the following question for you lab notebook:

- **What is the URL of the image that is first shown in the UI as the message is loading?**
  `https://www.google.com/images/spin-32.gif?a`

17. Test application with image messaging



Answer the following questions:

- **How do the fields in an image document differ from that of the text document?**

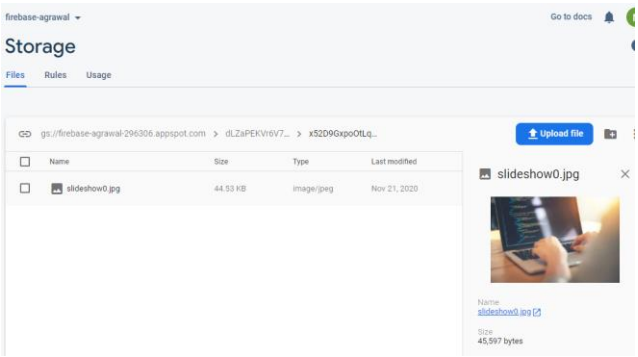
  Instead of text field we have ImageUrl and storageUri

- **What URL and storage location can the image be found at?**

  Image Url: "https://firebasestorage.googleapis.com/v0/b/firebase-agrawal-296306.appspot.com/o/dLZaPEKVr6V7EwT0pktf2C91J7r1%2Fx52D9GxpoOtLqV8FlM0L%2Fslideshow0.jpg?

  Storage location: "dLZaPEKVr6V7EwT0pktf2C91J7r1/x52D9GxpoOtLqV8FlM0L/slideshow0.jpg"

  Visit the "Storage" section in the Firebase console and take a screenshot of the image in the storage bucket for your lab notebook.



18. Deploy application

Answer the following questions:

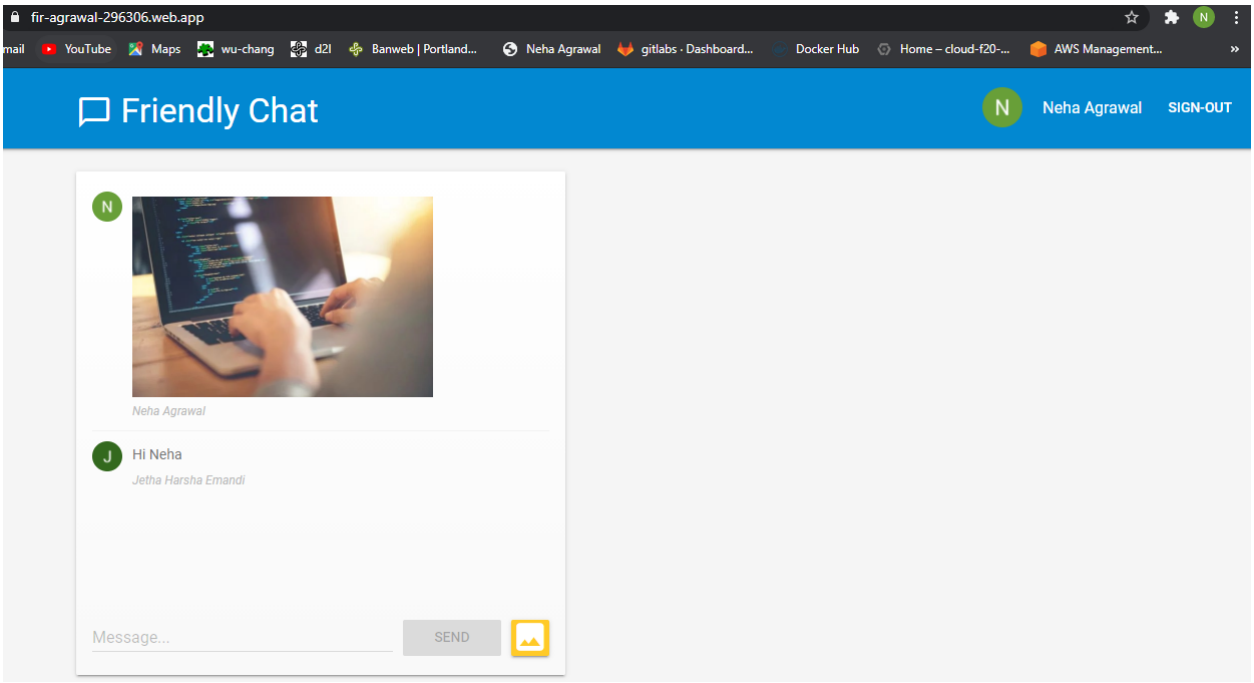
- **What directory is the application going to be served from?**

  ./public

- **What does the Cache-Control setting configured for the HTML and Javascript files do?**

  Cache-Control is a HTTP header that defines the amount of time and manner a file is to be cached.

Take a screenshot of the message including the URL for your lab notebook.



19. Clean up