

# CS 530 INTERNET WEB AND CLOUD SYSTEMS

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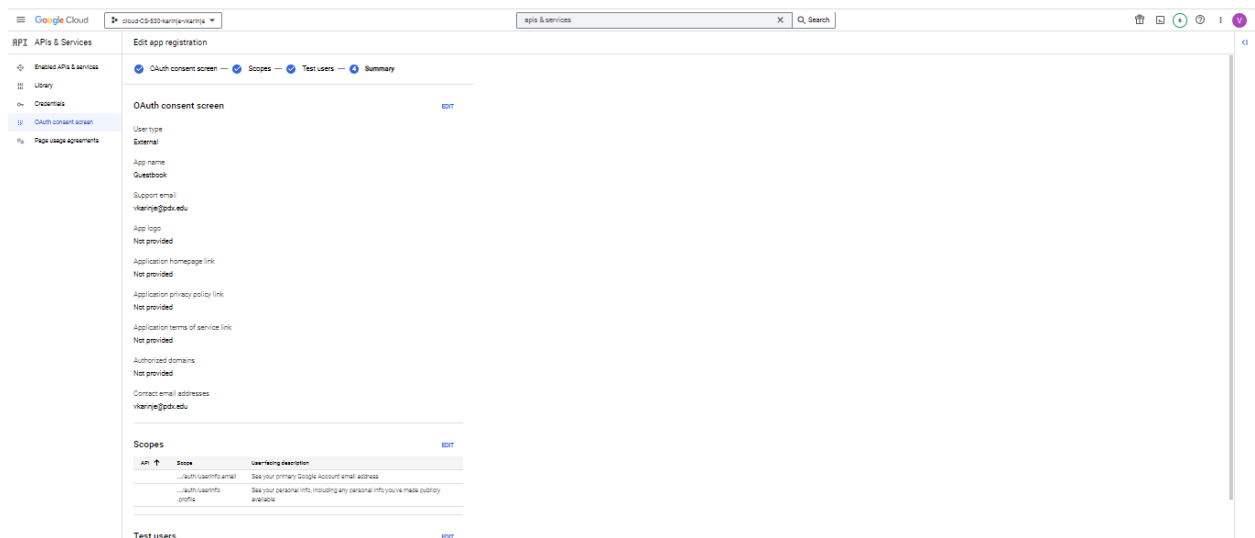
PSU ID: 925923534

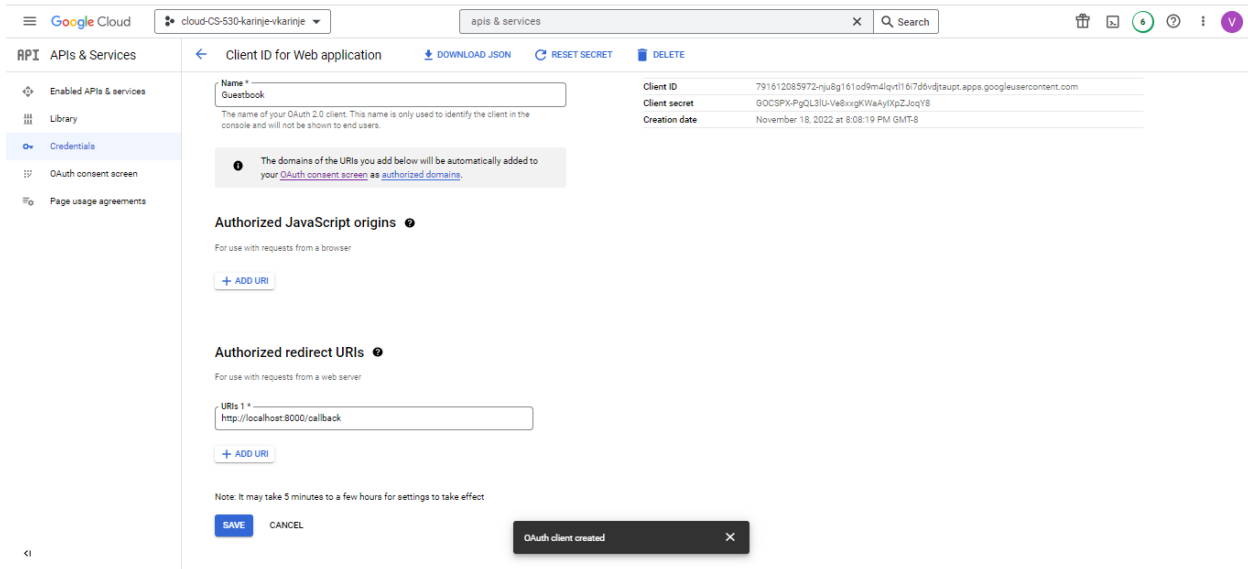
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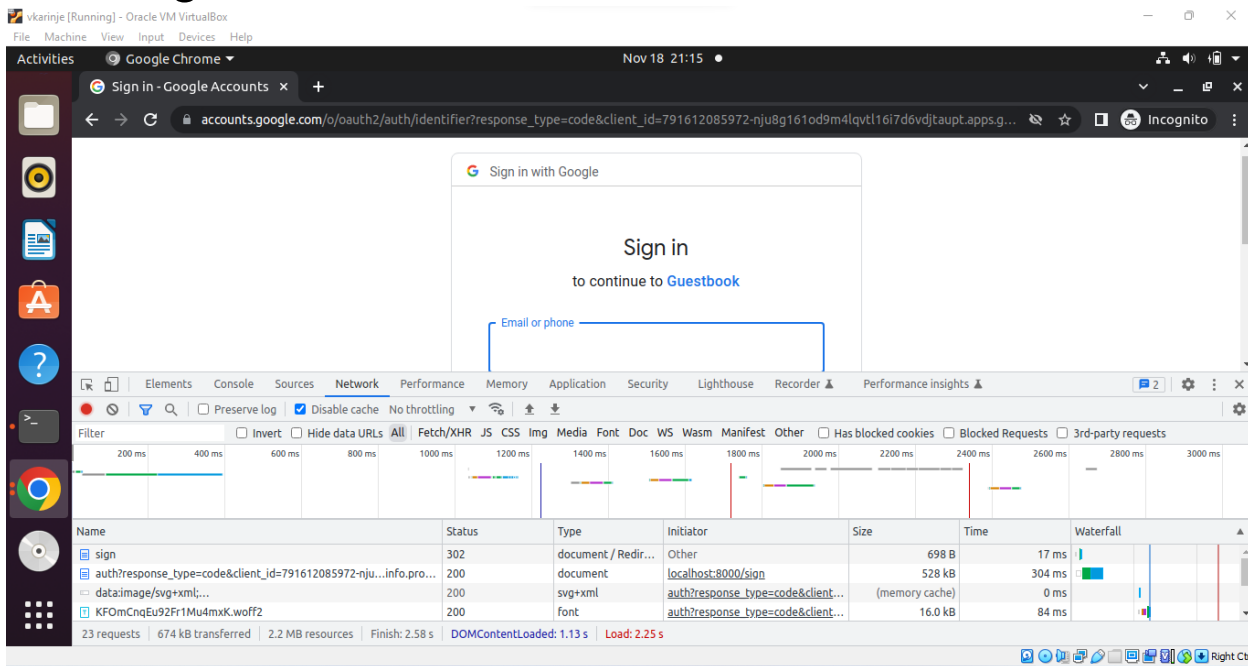
## 08.1 OAuth2 Guestbook

# Set up Identity Provider

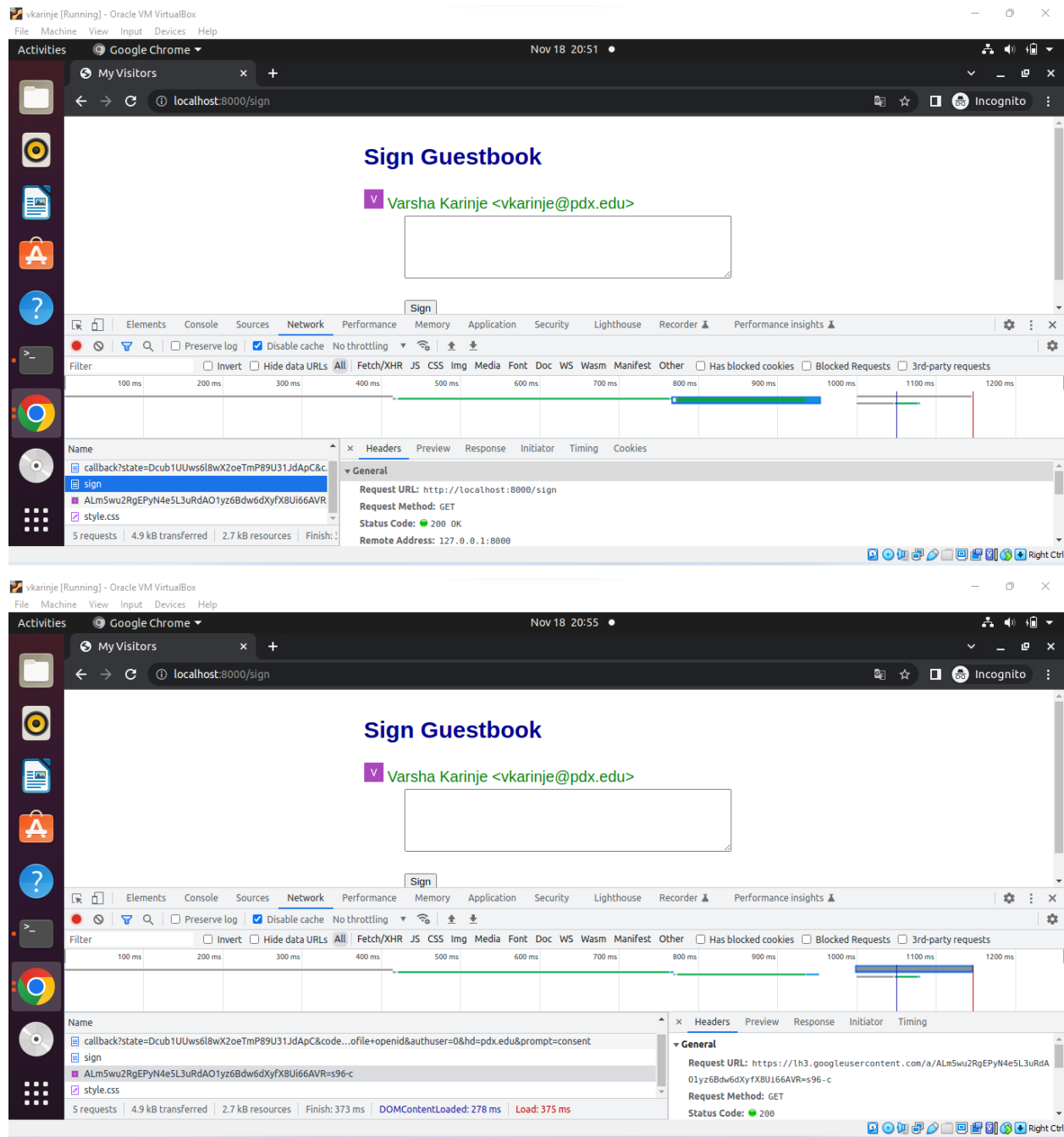




## Running the code



- Take a screenshot of the Headers that includes the URL and the returned HTTP status code for each request for your lab notebook.



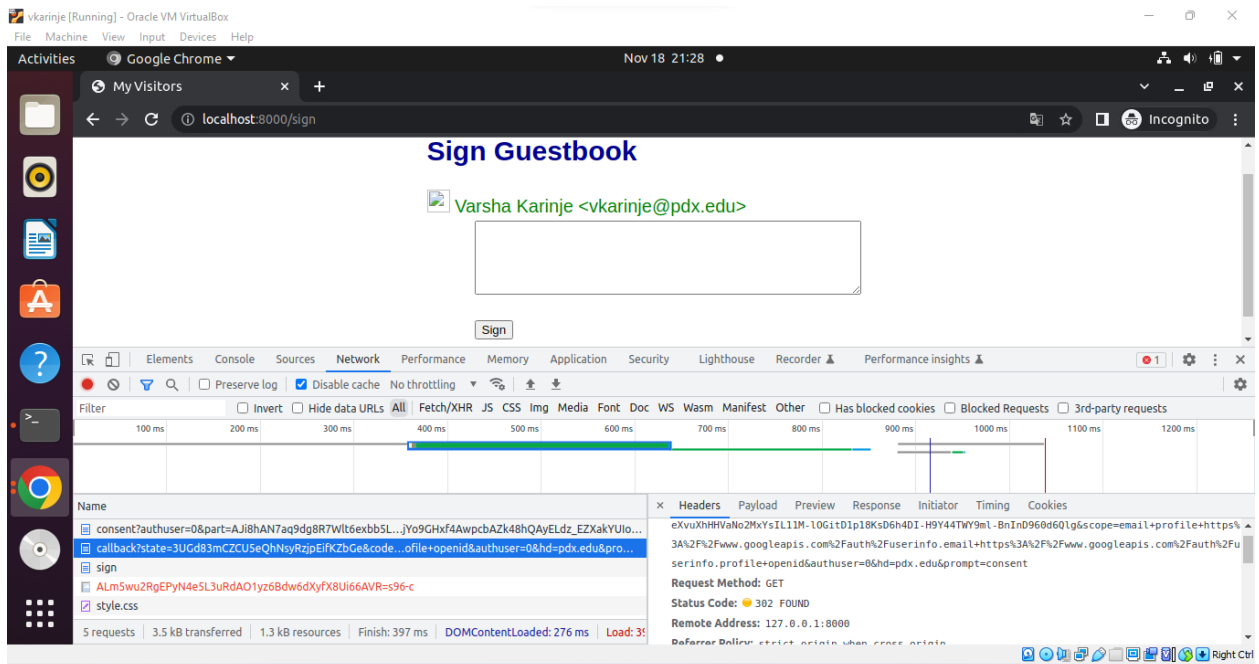
- Based on the description of the source code, what lines of code in our application are responsible for the second request?

Ans:

```
else:
    # Redirect to the identity provider and ask the identity provider to return the client
    # back to /callback route with the code
    google = OAuth2Session(client_id,
                           redirect_uri = 'http://localhost:8000/callback',
                           scope = 'https://www.googleapis.com/auth/userinfo.email ' +
                                   'https://www.googleapis.com/auth/userinfo.profile'
    )
    authorization_url, state = google.authorization_url(authorization_base_url)

    # Identity provider returns URL and random "state" that must be echoed later
    # to prevent CSRF.
    session['oauth_state'] = state
    return redirect(authorization_url)
```

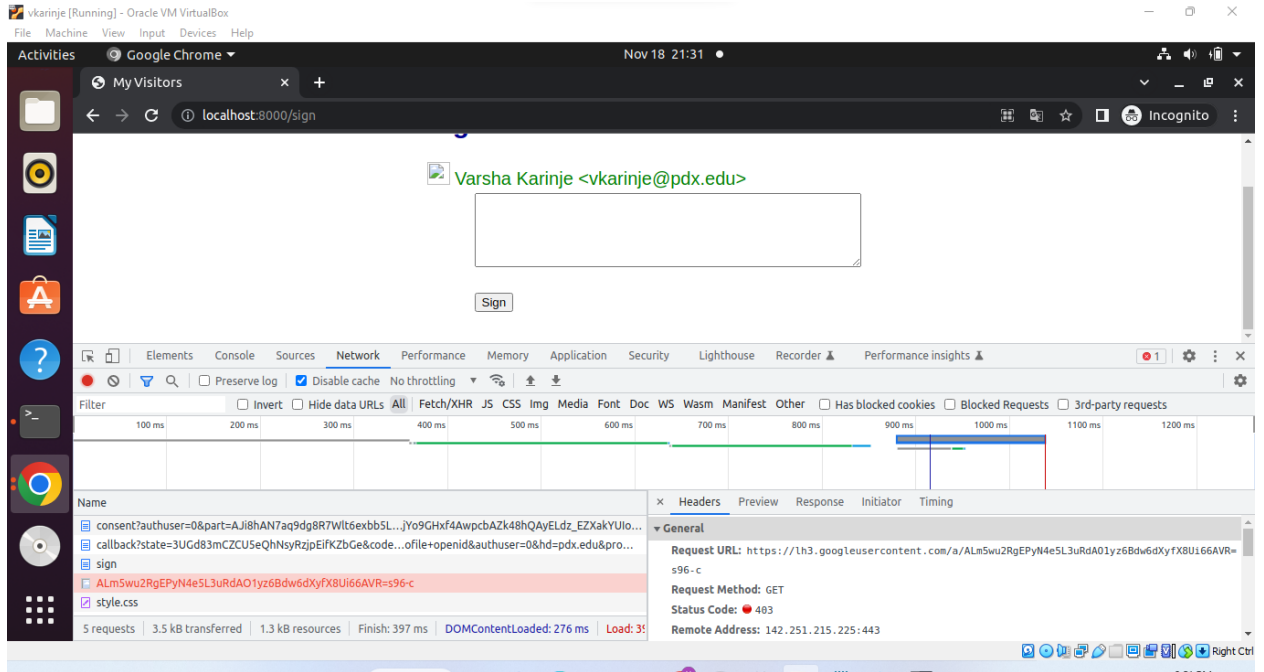
- Take a screenshot of the Headers that includes the entire Callback URL and its returned HTTP status code. What location is the User sent to as a result of this request?



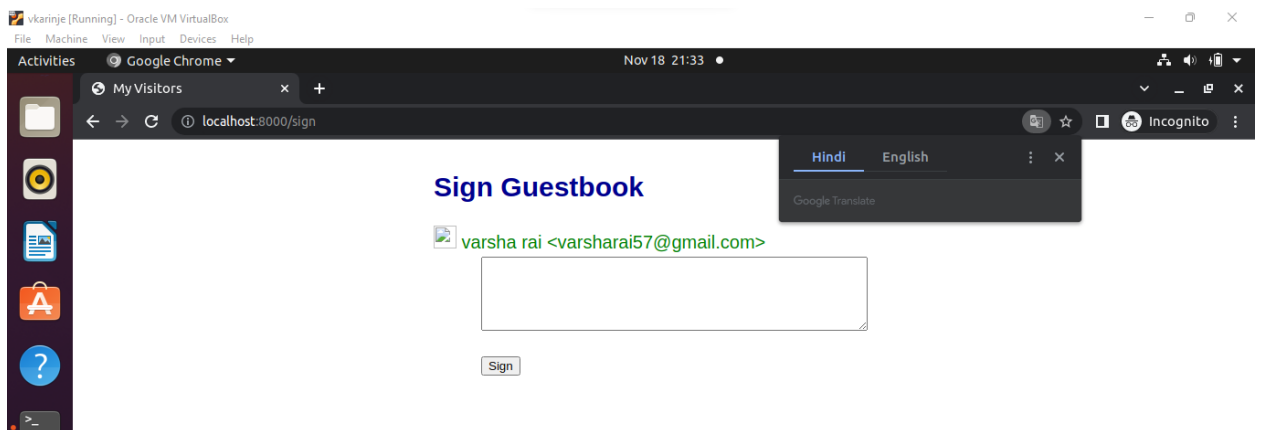
The user is sent back to the location <http://localhost:8000/sign>

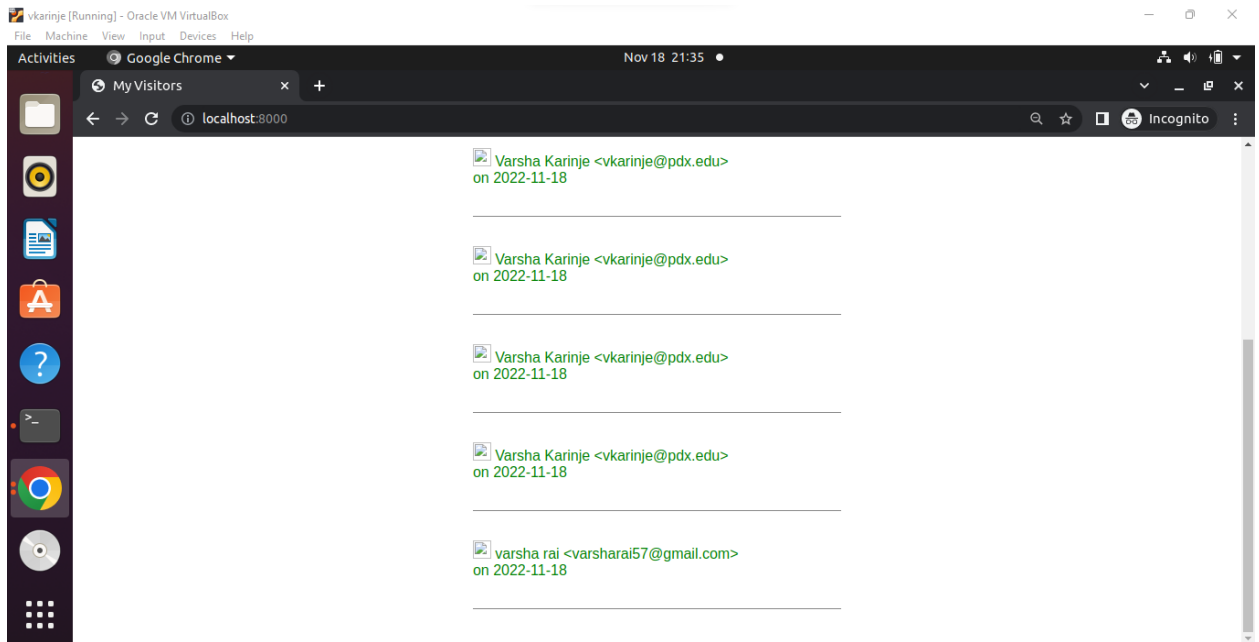
The status code returned is 302 FOUND

Find the request within Developer Tools that fetches the embedded image and take a screenshot of its URL

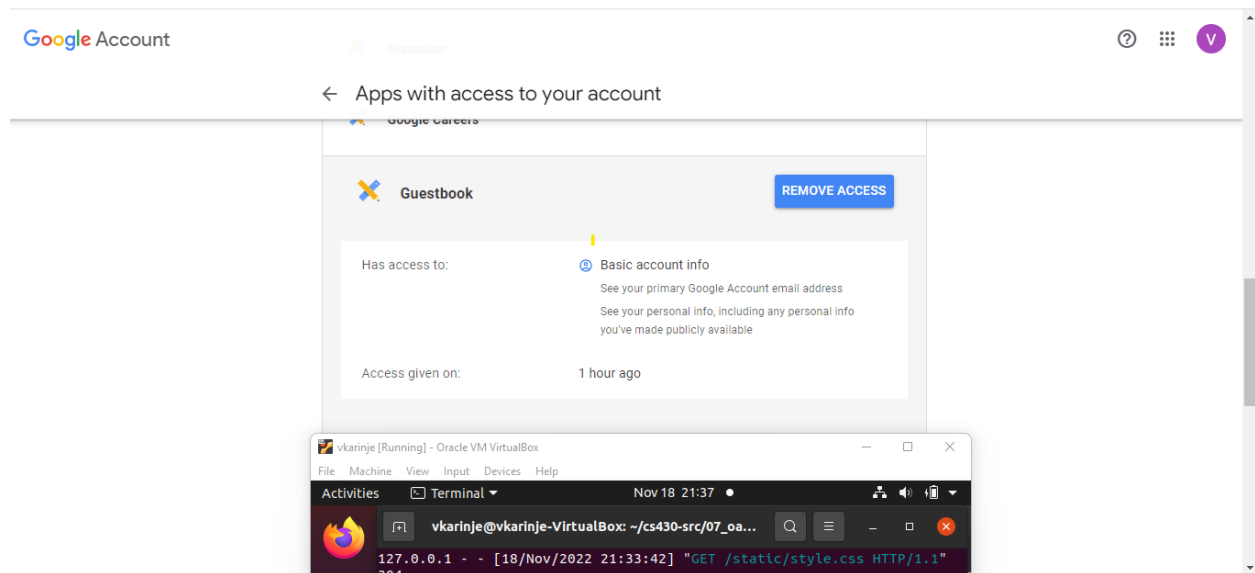


- Take a screenshot showing multiple authenticated accounts have been able to sign the Guestbook.





## Removing access



## 08.2g: ML APIs

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





Answer the following questions:

- What is the name of the function?

The name of the function is `detect_labels_uri`

- What type of Vision client is instantiated in it?

The type of Vision client that is instantiated in it is `ImageAnnotatorClient`

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

The method that is invoked in the Vision client to perform the detection is `label_detection`

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

The name of the attribute in the response object that contains the results we seek is `label_annotations`

- Take a screenshot of the output for the above commands

```
for more info on error messages, consult: https://cloud.google.com/apic/docs/errors
(env) vkarinje@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-cs-530-karinje-vkarinje) $ wget https://i.redd.it/eh7hijmr0r291.jpg -O mylogol
--2022-11-21 23:30:40-- https://i.redd.it/eh7hijmr0r291.jpg
Resolving i.redd.it (i.redd.it)... 151.101.1.140, 151.101.65.140, 151.101.120.140, ...
Connecting to i.redd.it (i.redd.it)|151.101.1.140|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 24912 (24K) [image/jpeg]
Saving to: 'mylogol'

mylogol                                100%[=====] 24.33K --.-KB/s  in 0.001s

2022-11-21 23:30:40 (31.8 MB/s) - 'mylogol' saved [24912/24912]

(env) vkarinje@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-cs-530-karinje-vkarinje) $ python detect.py logos mylogol
Logos:
Portland State University
(env) vkarinje@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-cs-530-karinje-vkarinje) $ ||
```

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

`detect_logos`

## Speech

```

Portland State University
(env) vkarinje@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-cs-530-karinje-vkarinje) pip install google-cloud-speech
Collecting google-cloud-speech
  Downloading google_cloud_speech-2.16.2-py2.py3-none-any.whl (228 kB)
    eta 0:00:30
Requirements already satisfied: google-api-core[grpc]>=2.0.*,<3.0.0dev in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-speech) (2.10.2)
Requirement already satisfied: protobuf>=3.20.0,<3.20.1,!=4.21.0,!=4.21.1,!=4.21.2,!=4.21.3,!=4.21.4,!=4.21.5,<5.0.0dev,>=3.19.5 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-speech) (4.21.9)
Requirement already satisfied: proto-plus>=1.22.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-speech) (1.22.1)
Requirement already satisfied: google-auth>=1.23.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,<3.0.0dev) (1.23.0)
Requirement already satisfied: requests>=2.18.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,<3.0.0dev) (1.22.0)
Requirement already satisfied: googleapis-common-protos>=2.0dev,<3.0.0dev in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,<3.0.0dev) (1.22.0)
Requirement already satisfied: grpcio>=1.23.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,<3.0.0dev) (1.23.2)
Requirement already satisfied: grpcio-status>=1.33.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,<3.0.0dev) (1.33.2)
Requirement already satisfied: cachetools>=4.0,<5.0.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth>=1.23.0) (4.2.1)
Requirement already satisfied: pyasn1-modules>=0.2.1 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth>=1.23.0) (0.2.1)
Requirement already satisfied: rsa>=4.0.1 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth>=1.23.0) (4.7.1)
Requirement already satisfied: six>=1.9.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth>=1.23.0) (1.16.0)
Requirement already satisfied: idna>=2.5 in /home/vkarinje/env/lib/python3.9/site-packages (from requests>=2.18.0) (3.3.2)
Requirement already satisfied: urllib3>=1.21.1 in /home/vkarinje/env/lib/python3.9/site-packages (from requests>=2.18.0) (1.26.12)
Requirement already satisfied: charset-normalizer>=2.0 in /home/vkarinje/env/lib/python3.9/site-packages (from requests>=2.18.0) (2.0.4)
Requirement already satisfied: certifi>=2017.4.17 in /home/vkarinje/env/lib/python3.9/site-packages (from requests>=2.18.0) (2022.9.24)
Requirement already satisfied: pyasn1>=0.4.8 in /home/vkarinje/env/lib/python3.9/site-packages (from pyasn1-modules>=0.2.1) (0.4.8)
Installing collected packages: google-cloud-speech
Successfully installed google-cloud-speech-2.16.2

[notice] A new release of pip available: 22.1 -> 22.3.1
[notice] To update, run: pip install --upgrade pip
(env) vkarinje@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-cs-530-karinje-vkarinje) cd ~/python-speech/samples/snippets
(env) vkarinje@cloudshell:~/python-speech/samples/snippets (cloud-cs-530-karinje-vkarinje) python transcribe.py resources/audio.raw

```

- Show the output for your lab notebook

```

(env) vkarinje@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-cs-530-karinje-vkarinje) cd ~/python-speech/samples/snippets
(env) vkarinje@cloudshell:~/python-speech/samples/snippets (cloud-cs-530-karinje-vkarinje) python transcribe.py resources/audio.raw
Transcript: how old is the Brooklyn Bridge
(env) vkarinje@cloudshell:~/python-speech/samples/snippets (cloud-cs-530-karinje-vkarinje)

```

Answer the following questions:

- What is the name of the function?

transcribe\_file is the name of the function.

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

recognize method is invoked in the Speech client to perform the detection

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

result.alternatives[0].transcript is the name of the attribute in the response object that contains the results we seek

## Translate

```

Transcript: how old is the Brooklyn Bridge
(env) vkarinje@cloudshell:~/python-speech/samples/snippets (cloud-cs-530-karinje-vkarinje) $ pip install google-cloud-translate
Collecting google-cloud-translate
  Downloading google-cloud-translate-2.8.4-py3-none-any.whl (117 kB)
Requirement already satisfied: protobuf<=3.20.0,>=2.20.1 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-translate) (4.21.9)
Requirement already satisfied: google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-translate) (2.10.2)
Requirement already satisfied: proto-plus<2.0.0dev,>=1.22.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-translate) (1.22.1)
Requirement already satisfied: google-cloud-core<2.0.0dev,>=1.2.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-translate) (2.3.2)
Requirement already satisfied: requests<3.0.0dev,>=2.18.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (2.28.1)
Requirement already satisfied: google-auth<3.0.0dev,>=1.25.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (2.15.0)
Requirement already satisfied: googleapis-common-protos<2.0dev,>=1.56.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (1.56.4)
Requirement already satisfied: grpcio<3.0.0dev,>=1.33.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (1.51.0)
Requirement already satisfied: grpcio-status<3.0.0dev,>=1.33.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (1.51.0)
Requirement already satisfied: pyasn1-modules<0.2.1 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth<3.0.0dev,>=1.25.0->google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (0.2.8)
Requirement already satisfied: pyasn1<0.5.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth<3.0.0dev,>=1.25.0->google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (0.4.8)
Requirement already satisfied: cachetools<6.0,>=2.0.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth<3.0.0dev,>=1.25.0->google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (5.2.0)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /home/vkarinje/env/lib/python3.9/site-packages (from requests<3.0.0dev,>=2.18.0->google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (1.26.12)
Requirement already satisfied: idna<3,>=2.5 in /home/vkarinje/env/lib/python3.9/site-packages (from requests<3.0.0dev,>=2.18.0->google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (3.4)
Requirement already satisfied: certifi<2017.4.17 in /home/vkarinje/env/lib/python3.9/site-packages (from requests<3.0.0dev,>=2.18.0->google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (2022.9.24)
Requirement already satisfied: charset-normalizer<3,>=2 in /home/vkarinje/env/lib/python3.9/site-packages (from requests<3.0.0dev,>=2.18.0->google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (2.1.1)
Requirement already satisfied: pyyaml<0.5.0,>=0.4.6 in /home/vkarinje/env/lib/python3.9/site-packages (from pyasn1-modules<0.2.1->google-auth<3.0.0dev,>=1.25.0->google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-translate) (0.4.6)
Installing collected packages: google-cloud-translate
Successfully installed google-cloud-translate-2.8.4

[notice] A new release of pip available: 22.1 -> 22.3.1
[notice] To update, run: pip install --upgrade pip
(env) vkarinje@cloudshell:~/python-speech/samples/snippets (cloud-cs-530-karinje-vkarinje) $ cd ~/python-translate/samples/snippets
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ python snippets.py translate-text en '你有没有带外套'
Text: 你有没有带外套
Translation: do you have a coat
Detected source language: zh-TW
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ ||

```

- Show the output for your lab notebook

```

[env] 10 updates, run: pip install --upgrade pip
(env) vkarinje@cloudshell:~/python-speech/samples/snippets (cloud-cs-530-karinje-vkarinje) $ cd ~/python-translate/samples/snippets
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ python snippets.py translate-text en '你有没有带外套'
Text: 你有没有带外套
Translation: do you have a coat
Detected source language: zh-TW
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ ||

```

Answer the following questions:

- What is the name of the function?

The name of the function is `translate_text`

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

The method `translate` is invoked in the Translate client to perform the detection

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

input, translatedText, detectedSourceLanguage

```

print(u"Text: {}".format(result["input"]))
print(u"Translation: {}".format(result["translatedText"]))
print(u"Detected source language: {}".format(result["detectedSourceLanguage"]))

```

## Natural Language

```

Detected source language: sh-4
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) pip install google-cloud-language
Collecting google-cloud-language
  Downloading google_cloud_language-2.6.1-py2.py3-none-any.whl (84 kB)
    Requirement already satisfied: google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-language) (2.10.2)
    Requirement already satisfied: proto-plus>=1.22.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-language) (1.22.1)
    Requirement already satisfied: protobuf>=3.20.0,!=3.20.1,!=4.21.1,!=4.21.2,!=4.21.3,!=4.21.4,!=4.21.5,<5.0.0dev,>=3.19.5 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-language) (4.21.5)
    Requirement already satisfied: google-api-common-protos>=2.0.0dev,!=1.16.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (1.56.4)
    Requirement already satisfied: google-auth>=1.25.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (2.15.0)
    Requirement already satisfied: requests>=2.18.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (2.28.1)
    Requirement already satisfied: grpcio>=1.22.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (1.51.0)
    Requirement already satisfied: grpcio-status>=2.0.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (1.51.0)
    Requirement already satisfied: six>=1.9.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth>=1.25.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (1.16.0)
    Requirement already satisfied: cachetools>=4.0.0,!=4.0.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth>=1.25.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (5.2.0)
    Requirement already satisfied: pyasn1-modules>=0.2.1 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth>=1.25.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (0.2.8)
    Requirement already satisfied: rsa>=4.1.4 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth>=1.25.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (4.9)
    Requirement already satisfied: charset-normalizer>=2 in /home/vkarinje/env/lib/python3.9/site-packages (from requests>=2.18.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (2.1.1)
    Requirement already satisfied: certifi>=2017.4.17 in /home/vkarinje/env/lib/python3.9/site-packages (from requests>=2.18.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (2022.9.24)
    Requirement already satisfied: urllib3>=1.21.1 in /home/vkarinje/env/lib/python3.9/site-packages (from requests>=2.18.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (1.26.12)
    Requirement already satisfied: idna>=2.5 in /home/vkarinje/env/lib/python3.9/site-packages (from requests>=2.18.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (2.4)
    Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /home/vkarinje/env/lib/python3.9/site-packages (from pyasn1-modules>=0.2.1->google-auth>=1.25.0->google-api-core[grpc]>=2.0.0,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.22.0->google-cloud-language) (0.4.8)
    Installing collected packages: google-cloud-language
    Successfully installed google-cloud-language-2.6.1

[notice] A new release of pip available: 22.0 -> 22.3.1
[notice] To update, run: pip install --upgrade pip
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)

```

```

(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) vi language.py
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) cat language.py
from google.cloud import language
import sys

client = language.LanguageServiceClient()

text = sys.argv[1]

request = {'document': {'type_': language.Document.Type.PLAIN_TEXT, 'content': text}}

sentiment = client.analyze_sentiment(request).document_sentiment
entities = client.analyze_entities(request).entities

print(f'"{text}" has sentiment={sentiment.score}\n')

print("Entities are:")
for entity in entities:
    print(f'name: {entity.name}')
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)

```

- Show the output for your lab notebook

```

print(f'name: {entity.name}')
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) python language.py 'homework is awful!'
"homework is awful!" has sentiment=-0.800000011920929

Entities are:
name: homework
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) python language.py 'homework is ok'
"homework is ok" has sentiment=0.30000001192092896

Entities are:
name: homework
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) python language.py 'homework is awesome?'
"homework is awesome?" has sentiment=0.4000000059604645

Entities are:
name: homework
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) python language.py 'homework is awesome!'
"homework is awesome!" has sentiment=0.8999999761581421

Entities are:
name: homework
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) 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=-0.6000000238410579

Entities are:
name: protestors
name: gas masks
name: Oregon
name: t-shirts
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)

```

# Code

```
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ vi solution.py
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ cat solution.py
import argparse
from google.cloud import vision
from google.cloud import speech
from google.cloud import translate_v2 as translate
from google.cloud import language
import six

def detect_labels_uri(uri):
    """Detects labels in the file located in Google Cloud Storage or on the
    Web."""

    # create ImageAnnotatorClient object
    client = vision.ImageAnnotatorClient()

    # create Image object
    image = vision.Image()

    # specify location of image
    image.source.image_uri = uri

    # get label_detection response by passing image to client
    response = client.label_detection(image=image)

    # get label_annotations portion of response
    labels = response.label_annotations

    # we only need the label descriptions
    label_descriptions = []
    for label in labels:
        label_descriptions.append(label.description)

    return label_descriptions

def transcribe_gcs(language, gcs_uri):
    """Transcribes the audio file specified by the gcs_uri."""

    # create ImageAnnotatorClient object
    client = speech.SpeechClient()

    # specify location of speech
    audio = speech.RecognitionAudio(uri=gcs_uri) # need to specify speech.types
```

Examine the code and answer the following questions:

- What is the name of the function that performs the transcription?

Ans: The name of the function that performs the transcription is `transcribe_gcs`

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

Ans: The name of the function that performs the translation is `translate_text`

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

Ans: The name of the function that performs the entity analysis on the translation is `entities_text`

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

Ans: `label_detection`

# Test integration

```
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ 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: ['Sports equipment', 'Soccer', 'Football', 'Plant', 'Ball', 'Player', 'Playing sports', 'Soccer ball', 'Ball game', 'Team sport']
The audio and image do not appear to be related.
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ ||
```

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

Ans: The program is case sensitive while checking for entities and labels. The program must be made case insensitive to make sure that the comparison is matched.

```
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ python solution.py tr-TR gs://ml-api-codelab/tr-bike.wav gs://ml-api-codelab/bicycle.jpg
Transcription: bisikletimi sokakta bırak
Translation: leave my bike on the street
Entities: ['bike', 'street']
Image labels: ['Bicycle', 'Clothing', 'Footwear', 'Tire', 'Wheel', 'Bicycles--Equipment and supplies', 'Land vehicle', 'Shoe', 'Bicycle frame', 'Bicycle wheel']
The audio and image do not appear to be related.
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ ||
```

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

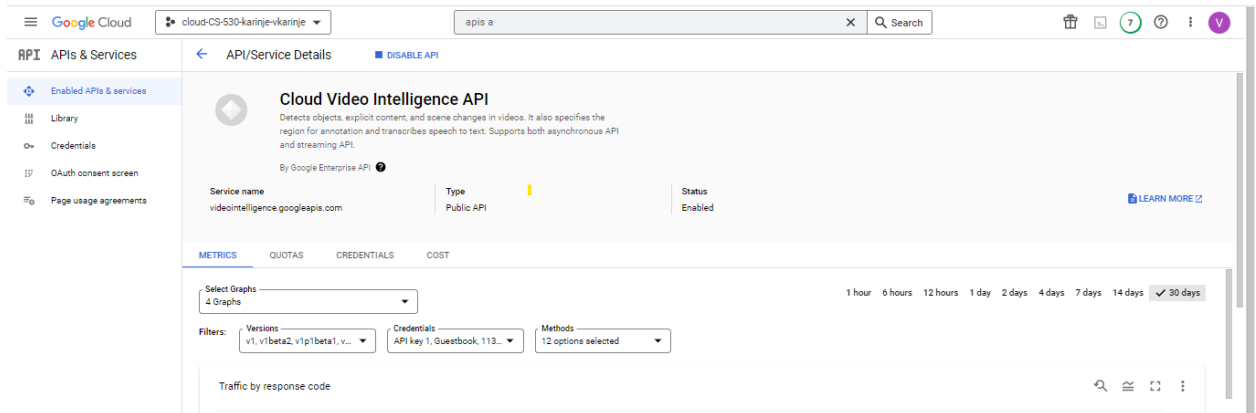
Ans: The program seems to be working fine. The translation returns bike and street. The labels contain words like bicycle and nothing relates to street. Hence, no tags match.

```
The audio and image do not appear to be related.
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ python solution.py tr-TR gs://ml-api-codelab/tr-ostrich.wav gs://ml-api-codelab/birds.jpg
Transcription: çok fazla deve tugu var
Translation: there are too many ostriches
Entities: ['ostriches']
Image labels: ['Bird', 'Ratite', 'Cloud', 'Sky', 'Beak', 'Plant', 'Green', 'Neck', 'Ostrich', 'Casuariiformes']
The audio and image do not appear to be related.
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ ||
```

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

Ans: The program returns singular and plural words and not the exact matches. For entities Ostriches the label Ostrich is returned. A method that matches the comparisons entities and labels while comparing even if the entity is case-sensitive or singular/plural can be added.

# APIs #2 (Video Intelligence API)



## Video setup

```
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ pip install google-cloud-videointelligence
Collecting google-cloud-videointelligence
  Downloading google-cloud-videointelligence-2.8.5-py2.py3-none-any.whl (204 kB)
    204 kB | 5.4 MB/s | 3.7 s eta
Requirement already satisfied: google-api-core[grpc]>=2.0.0, <3.0.0dev, >=1.32.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-videointelligence) (2.10.2)
Requirement already satisfied: protobuf<=3.20.0, >=3.20.1, <4.21.1, >=4.21.2, <4.21.3, >=4.21.4, <4.21.5, <3.0.0dev, >=3.19.5 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-videointelligence) (4.21.9)
Requirement already satisfied: proto-plus<2.0.0dev, >=1.22.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-videointelligence) (1.22.1)
Requirement already satisfied: googleapis-common-protos<2.0dev, >=1.56.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0, <3.0.0dev, >=1.32.0->google-cloud-videointelligence) (1.56.4)
Requirement already satisfied: requests<2.0.0dev, >=2.18.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0, <3.0.0dev, >=1.32.0->google-cloud-videointelligence) (2.28.1)
Requirement already satisfied: google-auth<2.0dev, >=1.25.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0, <3.0.0dev, >=1.32.0->google-cloud-videointelligence) (2.13.0)
Requirement already satisfied: grpcio<2.0dev, >=1.33.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0, <3.0.0dev, >=1.32.0->google-cloud-videointelligence) (1.51.0)
Requirement already satisfied: grpcio-status<2.0dev, >=1.33.2 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.0, <3.0.0dev, >=1.32.0->google-cloud-videointelligence) (1.51.0)
Requirement already satisfied: aiohttp<3.9.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth<2.0dev, >=1.25.0->google-api-core[grpc]>=2.0.0, <3.0.0dev, >=1.32.0->google-cloud-videointelligence) (3.8.4)
Requirement already satisfied: cachetools<5.0, >=2.0.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-auth<2.0dev, >=1.25.0->google-api-core[grpc]>=2.0.0, <3.0.0dev, >=1.32.0->google-cloud-videointelligence) (5.2.0)

[notice] A new release of pip is available: 22.0.2 -> 22.3.1
[notice] To update, run: pip install --upgrade pip
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ gsutil mb gs://vkarinje-bucket
Creating gs://vkarinje-bucket/...
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ |
```



```
[notice] A new release of pip available: 20.0.2 -> 20.0.4
[notice] To update, run: pip install --upgrade pip
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-es-530-karinje-vkarinje) $ gsutil mb gs://vkarinje-bucket
Creating gs://vkarinje-bucket/...
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-es-530-karinje-vkarinje) $ export CLOUD_STORAGE_BUCKET=vkarinje-bucket
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-es-530-karinje-vkarinje) $ gsutil acl set public-read gs://${CLOUD_STORAGE_BUCKET}
Setting ACL on gs://vkarinje-bucket/...
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-es-530-karinje-vkarinje) $ gsutil defacl set public-read gs://${CLOUD_STORAGE_BUCKET}
Setting default object ACL on gs://vkarinje-bucket/...
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-es-530-karinje-vkarinje) $ ||
```

```

(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ vi labels.py
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje) $ cat labels.py
import argparse

from google.cloud import videointelligence

def analyze_labels(path):
    """ Detects labels given a GCS path. """
    video_client = videointelligence.VideoIntelligenceServiceClient()
    features = [videointelligence.Feature.LABEL_DETECTION]
    operation = video_client.annotate_video(input_uri=path, features=features)

    print('\nProcessing video for label annotations:')
    result = operation.result(timeout=90)
    print('\nFinished processing.')

    segment_labels = result.annotation_results[0].segment_label_annotations
    for i, segment_label in enumerate(segment_labels):
        print('Video label description: {}'.format(
            segment_label.entity.description))
        for category_entity in segment_label.category_entities:
            print('\tLabel category description: {}'.format(
                category_entity.description))

    for i, segment in enumerate(segment_label.segments):
        start_time = segment.segment.start_time_offset.seconds
        end_time = segment.segment.end_time_offset.seconds
        positions = '{}s to {}'.format(start_time, end_time)
        confidence = segment.confidence
        print('\tSegment {}: {}'.format(i, positions))
        print('\tConfidence: {}'.format(confidence))
    print('\n')

```

```

analyze_labels(args.path)
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ python labels.py gs://$(CLOUD_STORAGE_BUCKET)/SportsBloopers2016.mp4

Processing video for label annotations:

Finished processing.
Video label description: player
  Segment 0: 0s to 178s
  Confidence: 0.8446521162986755

Video label description: hockey
  Label category description: sports
  Segment 0: 0s to 178s
  Confidence: 0.3119717528256781

Video label description: stadium
  Label category description: location
  Label category description: structure
  Segment 0: 0s to 178s
  Confidence: 0.5119114518165588

Video label description: basketball player
  Label category description: person
  Segment 0: 0s to 178s
  Confidence: 0.352955006289618

Video label description: ice hockey
  Label category description: hockey
  Segment 0: 0s to 178s
  Confidence: 0.42965470923914185

Video label description: ball game
  Label category description: sports
  Segment 0: 0s to 178s
  Confidence: 0.5648892521858215

Video label description: audience

```

```
CLOUD SHELL
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Video label description: ball game
  Label category description: sports
  Segment 0: 0s to 178s
  Confidence: 0.5648892521858215

Video label description: audience
  Label category description: people
  Segment 0: 0s to 178s
  Confidence: 0.4254549741744995

Video label description: games
  Segment 0: 0s to 178s
  Confidence: 0.7786175012588501

Video label description: team sport
  Label category description: sports
  Segment 0: 0s to 178s
  Confidence: 0.688680112361908

Video label description: sport venue
  Label category description: location
  Label category description: structure
  Segment 0: 0s to 178s
  Confidence: 0.3432130515575409

Video label description: crowd
  Label category description: people
  Segment 0: 0s to 178s
  Confidence: 0.3974151611328125

Video label description: basketball
  Label category description: sports
  Segment 0: 0s to 178s
  Confidence: 0.9137870669364929
```

```

Video label description: sport venue
  Label category description: location
  Label category description: structure
  Segment 0: 0s to 178s
  Confidence: 0.3432130515575409

Video label description: crowd
  Label category description: people
  Segment 0: 0s to 178s
  Confidence: 0.3974151611328125

Video label description: basketball
  Label category description: sports
  Segment 0: 0s to 178s
  Confidence: 0.9137870669364929

Video label description: sports
  Segment 0: 0s to 178s
  Confidence: 0.9218811392784119

```

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?

Ans: The top 3 labels are player, basketball and sports. The confidence in them is 0.8, 0.91 and 0.92 respectively.

```

Finished processing.
Video label description: player
  Segment 0: 0s to 178s
  Confidence: 0.8446521162986755

```

```

Video label description: basketball
  Label category description: sports
  Segment 0: 0s to 178s
  Confidence: 0.9137870669364929

Video label description: sports
  Segment 0: 0s to 178s
  Confidence: 0.9218811392784119

```

Answer the following questions:

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

Ans: VideoIntelligenceServiceClient

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

Ans: annotate\_video

## APIs #3 (Web site integration)

```
(env) vkarinje@cloudshell:~/python-translate/samples/snippets (cloud-cs-530-karinje-vkarinje)$ cd ~/python-docs-samples/codelabs/flex_and_vision
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ ||
```

# IAM service account setup

```
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ gcloud iam service-accounts create cs430flex
Created service account [cs430flex].
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ gcloud projects add-iam-policy-binding $(GOOGLE_CLOUD_PROJECT) --member serviceAccount:cs430flex@$(GOOGLE_CLOUD_PROJECT).iam.gserviceaccount.com --role roles/storage.admin
Updated IAM policy for project [cloud-cs-530-karinje-vkarinje].
bindings:
- members:
  - serviceAccount:service-791612085972@gcp-gae-service.iam.gserviceaccount.com
    role: roles/appengine.serviceAgent
  - members:
  - serviceAccount:791612085972@cloudbuild.gserviceaccount.com
    role: roles/cloudbuild.builds.builder
  - members:
  - serviceAccount:service-791612085972@gcp-sa-cloudbuild.iam.gserviceaccount.com
    role: roles/cloudbuild.serviceAgent
  - members:
  - serviceAccount:service-791612085972@gcp-admin-robot.iam.gserviceaccount.com
    role: roles/cloudfunctions.serviceAgent
  - members:
  - serviceAccount:service-791612085972@gcp-sa-cloudscheduler.iam.gserviceaccount.com
    role: roles/cloudscheduler.serviceAgent
  - members:
  - serviceAccount:service-791612085972@compute-system.iam.gserviceaccount.com
    role: roles/compute.serviceAgent
  - members:
  - deleted:serviceAccount:gcs-lab@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com?uid=102296725729513422801
    role: roles/compute.viewer
  - members:
```

```
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ gcloud projects add-iam-policy-binding $(GOOGLE_CLOUD_PROJECT) --member serviceAccount:cs430flex@$(GOOGLE_CLOUD_PROJECT).iam.gserviceaccount.com --role roles/datastore.user
Updated IAM policy for project [cloud-cs-530-karinje-vkarinje].
bindings:
- members:
  - serviceAccount:service-791612085972@gcp-gae-service.iam.gserviceaccount.com
    role: roles/appengine.serviceAgent
  - members:
  - serviceAccount:791612085972@cloudbuild.gserviceaccount.com
    role: roles/cloudbuild.builds.builder
  - members:
  - serviceAccount:service-791612085972@gcp-sa-cloudbuild.iam.gserviceaccount.com
    role: roles/cloudbuild.serviceAgent
  - members:
  - serviceAccount:service-791612085972@gcp-admin-robot.iam.gserviceaccount.com
    role: roles/cloudfunctions.serviceAgent
  - members:
  - serviceAccount:service-791612085972@gcp-sa-cloudscheduler.iam.gserviceaccount.com
    role: roles/cloudscheduler.serviceAgent
  - members:
  - serviceAccount:service-791612085972@compute-system.iam.gserviceaccount.com
    role: roles/compute.serviceAgent
  - members:
  - deleted:serviceAccount:gcs-lab@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com?uid=102296725729513422801
    role: roles/compute.viewer
  - serviceAccount:service-791612085972@container-engine-robot.iam.gserviceaccount.com
    role: roles/container.serviceAgent
  - members:
  - serviceAccount:service-791612085972@containerregistry.iam.gserviceaccount.com
    role: roles/containerregistry.serviceAgent
  - members:
  - serviceAccount:cloud-cs-530-karinje-vkarinje@appspot.gserviceaccount.com
  - serviceAccount:cs430flex@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com
  - serviceAccount:guestbook@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com
    role: roles/datastore.user
  - members:
  - serviceAccount:791612085972@compute@developer.gserviceaccount.com
```

```
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ gcloud projects add-iam-policy-binding $(GOOGLE_CLOUD_PROJECT) --member serviceAccount:cs430flex@$(GOOGLE_CLOUD_PROJECT).iam.gserviceaccount.com --role roles/serviceusage.serviceUsageConsumer
Updated IAM policy for project [cloud-cs-530-karinje-vkarinje].
bindings:
- members:
  - serviceAccount:service-791612085972@gcp-gae-service.iam.gserviceaccount.com
    role: roles/appengine.serviceAgent
  - members:
  - serviceAccount:791612085972@cloudbuild.gserviceaccount.com
    role: roles/cloudbuild.builds.builder
  - members:
  - serviceAccount:service-791612085972@gcp-sa-cloudbuild.iam.gserviceaccount.com
    role: roles/cloudbuild.serviceAgent
  - members:
  - serviceAccount:service-791612085972@gcp-admin-robot.iam.gserviceaccount.com
    role: roles/cloudfunctions.serviceAgent
  - members:
  - serviceAccount:service-791612085972@gcp-sa-cloudscheduler.iam.gserviceaccount.com
    role: roles/cloudscheduler.serviceAgent
  - members:
  - serviceAccount:service-791612085972@compute-system.iam.gserviceaccount.com
    role: roles/compute.serviceAgent
  - members:
  - deleted:serviceAccount:gcs-lab@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com?uid=102296725729513422801
    role: roles/compute.viewer
  - members:
  - serviceAccount:service-791612085972@container-engine-robot.iam.gserviceaccount.com
    role: roles/container.serviceAgent
  - members:
  - serviceAccount:service-791612085972@containerregistry.iam.gserviceaccount.com
    role: roles/containerregistry.serviceAgent
  - members:
  - serviceAccount:cloud-cs-530-karinje-vkarinje@appspot.gserviceaccount.com
  - serviceAccount:cs430flex@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com
  - serviceAccount:guestbook@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com
    role: roles/datastore.user
  - members:
  - serviceAccount:791612085972@compute@developer.gserviceaccount.com
  - serviceAccount:791612085972@cloudservices.gserviceaccount.com
    role: roles/editor
  - members:
  - serviceAccount:service-791612085972@firebase.rules.iam.gserviceaccount.com
    role: roles/firebase.rules.system
  - members:
```

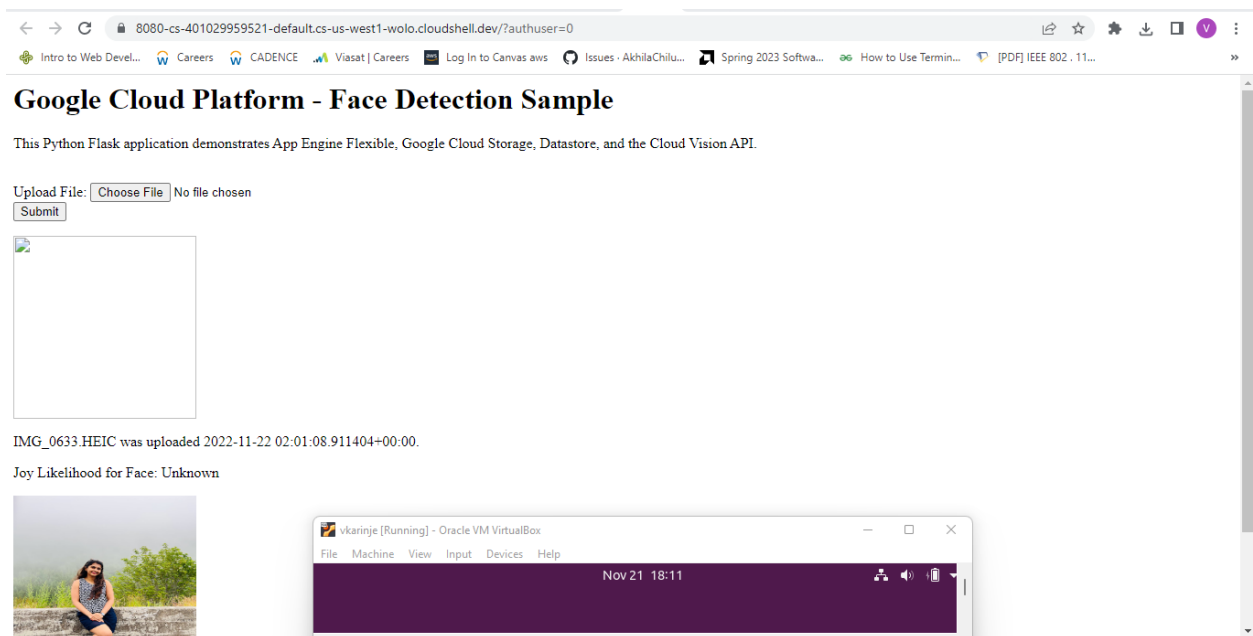
```
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ gcloud iam service-accounts keys create ~/cs430flex.json \
--iam-account cs430flex@$(GOOGLE_CLOUD_PROJECT).iam.gserviceaccount.com
created key [c71e029f83226b80ac541308582ae58ec28c47ab3] of type [json] as [/home/vkarinje/cs430flex.json] for [cs430flex@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com]
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ ||
```

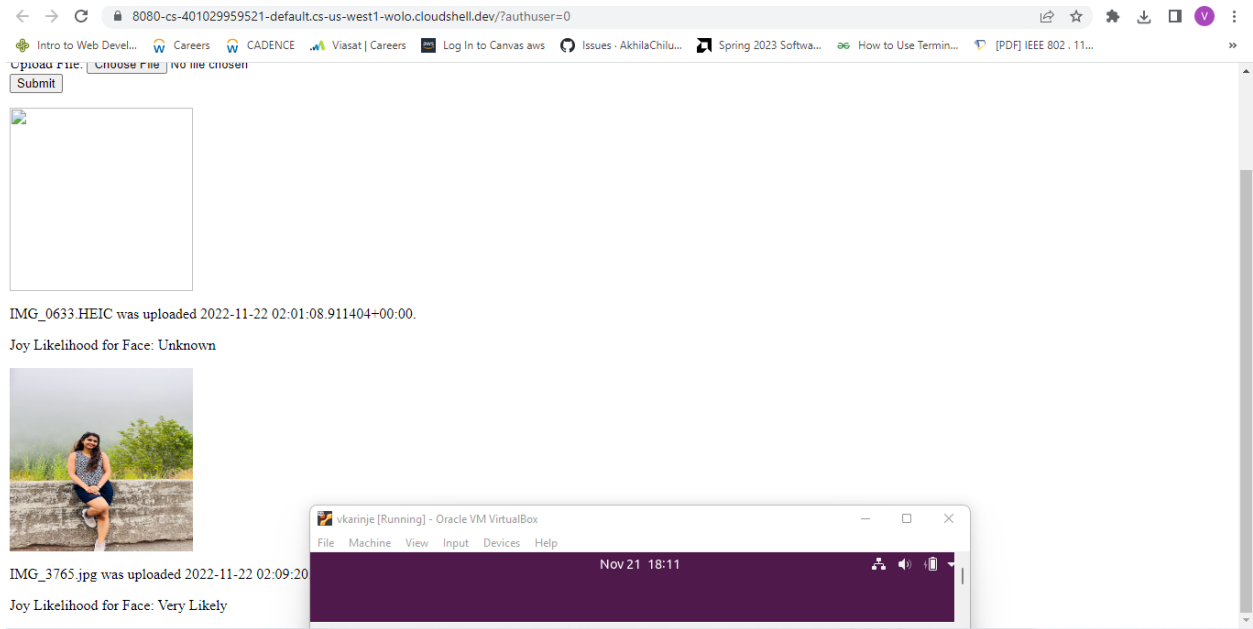
# Application

```
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ pip install -r requirements.txt
Ignoring gunicorn: markers 'python_version < "3.0"' don't match your environment
Ignoring google-cloud-storage: markers 'python_version < "3.7"' don't match your environment
Collecting Flask==2.0.3
  Downloading Flask-2.0.3-py3-none-any.whl (95 kB)
  95/95.6 kB 4.7 MB/s eta 0:00:00
Collecting gunicorn==20.1.0
  Using cached gunicorn-20.1.0-py3-none-any.whl (79 kB)
Collecting google-cloud-vision==2.1.0
  Downloading google_cloud_vision-2.1.0-py2.py3-none-any.whl (286 kB)
  286/286.5 kB 17.7 MB/s eta 0:00:00
Collecting google-cloud-storage==2.1.0
  Downloading google_cloud_storage-2.1.0-py2.py3-none-any.whl (106 kB)
  106/106.6 kB 11.7 MB/s eta 0:00:00
Collecting google-cloud-datastore==2.7.1
  Downloading google_cloud_datastore-2.7.1-py2.py3-none-any.whl (140 kB)
  140/140.6 kB 17.7 MB/s eta 0:00:00
Collecting itsdangerous==2.0
  Using cached itsdangerous-2.1.2-py3-none-any.whl (15 kB)
Collecting Werkzeug==2.0
  Using cached Werkzeug-2.2.2-py3-none-any.whl (232 kB)
Collecting click==7.1.2
  Using cached click-7.1.2-py3-none-any.whl (96 kB)
Collecting Jinja2==3.0
  Using cached Jinja2-3.1.2-py3-none-any.whl (133 kB)
Requirement already satisfied: setuptools==59.0.0 in /home/vkarinje/env/lib/python3.9/site-packages (from gunicorn==20.1.0->-r requirements.txt (line 2)) (65.5.0)
Requirement already satisfied: google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.32.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-vision==2.1.0->-r requirements.txt (line 4)) (2.10.1)
Requirement already satisfied: proto-plus>=1.15.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-vision==2.1.0->-r requirements.txt (line 4)) (1.22.1)
Collecting protobuf<4.0.0dev,>=3.19.0
  Downloading protobuf-3.20.3-cp39-cp39-manylinux2_5_x86_64-manylinux_x86_64.whl (1.0 MB)
  1.0/1.0 MB 10.0 MB/s
Requirement already satisfied: google-cloud-core<3.0dev,>=1.6.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-storage==2.1.0->-r requirements.txt (line 6)) (2.3.2)
Requirement already satisfied: google-resumable-media>=1.3.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-storage==2.1.0->-r requirements.txt (line 6)) (2.4.0)
Requirement already satisfied: requests<3.0.0dev,>=2.19.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-storage==2.1.0->-r requirements.txt (line 6)) (2.28.1)
Requirement already satisfied: google-auth<3.0dev,>=1.25.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-cloud-storage==2.1.0->-r requirements.txt (line 6)) (2.19.0)
Requirement already satisfied: google-api-python-client>=2.0.0 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.32.0->google-cloud-vision==2.1.0->-r requirements.txt (line 4)) (2.51.0)
Requirement already satisfied: google-auth-oauthlib>=0.4.1 in /home/vkarinje/env/lib/python3.9/site-packages (from google-api-core[grpc]>=2.0.*,!=2.1.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,<3.0.0dev,>=1.32.0->google-cloud-vision==2.1.0->-r requirements.txt (line 4)) (0.5.1)

[notice] To update, run: pip install --upgrade pip
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje)$ python main.py
* Serving Flask app 'main' (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:8080
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 809-823-517
```

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

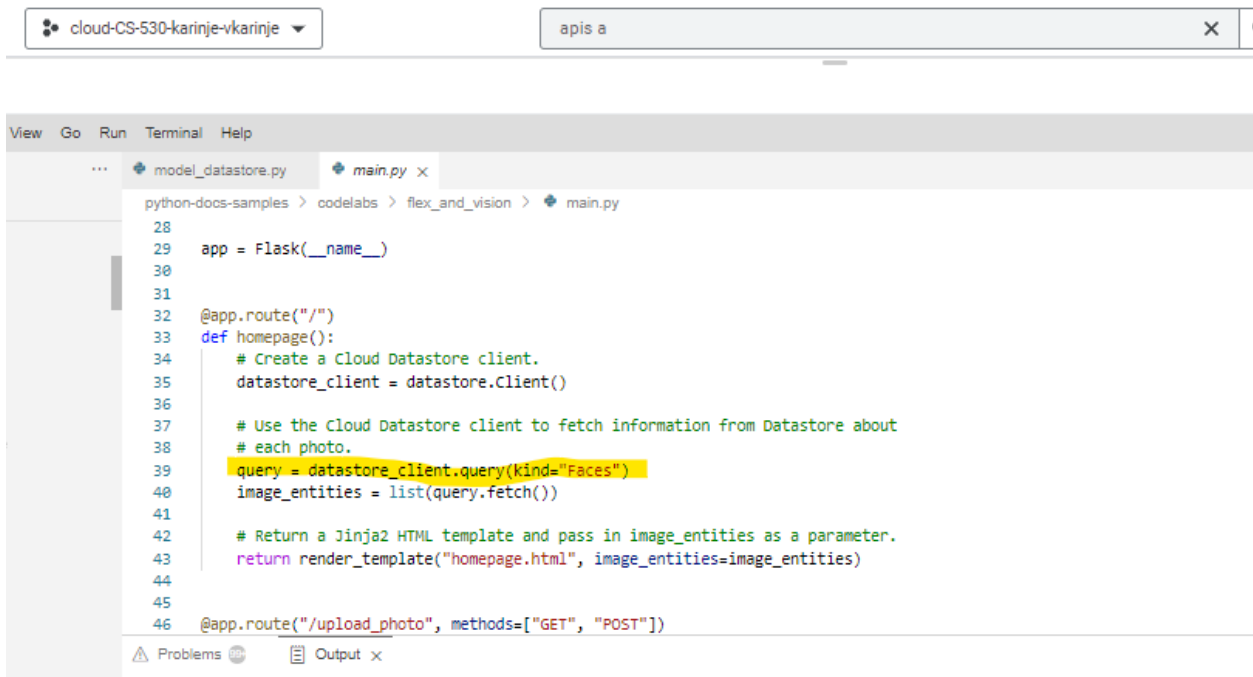




## Code

Answer the following questions:

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



Line 39

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

cloud-CS-530-karinje-vkarinje x apis a x

View Go Run Terminal Help

... model\_datastore.py main.py x

python-does-samples > codelabs > flex\_and\_vision > main.py

```
28
29 app = Flask(__name__)
30
31
32 @app.route("/")
33 def homepage():
34     # Create a Cloud Datastore client.
35     datastore_client = datastore.Client()
36
37     # Use the Cloud Datastore client to fetch information from Datastore about
38     # each photo.
39     query = datastore_client.query(kind="Faces")
40     image_entities = list(query.fetch())
41
42     # Return a Jinja2 HTML template and pass in image_entities as a parameter.
43     return render_template("homepage.html", image_entities=image_entities)
44
45
46 @app.route("/upload_photo", methods=["GET", "POST"])
```

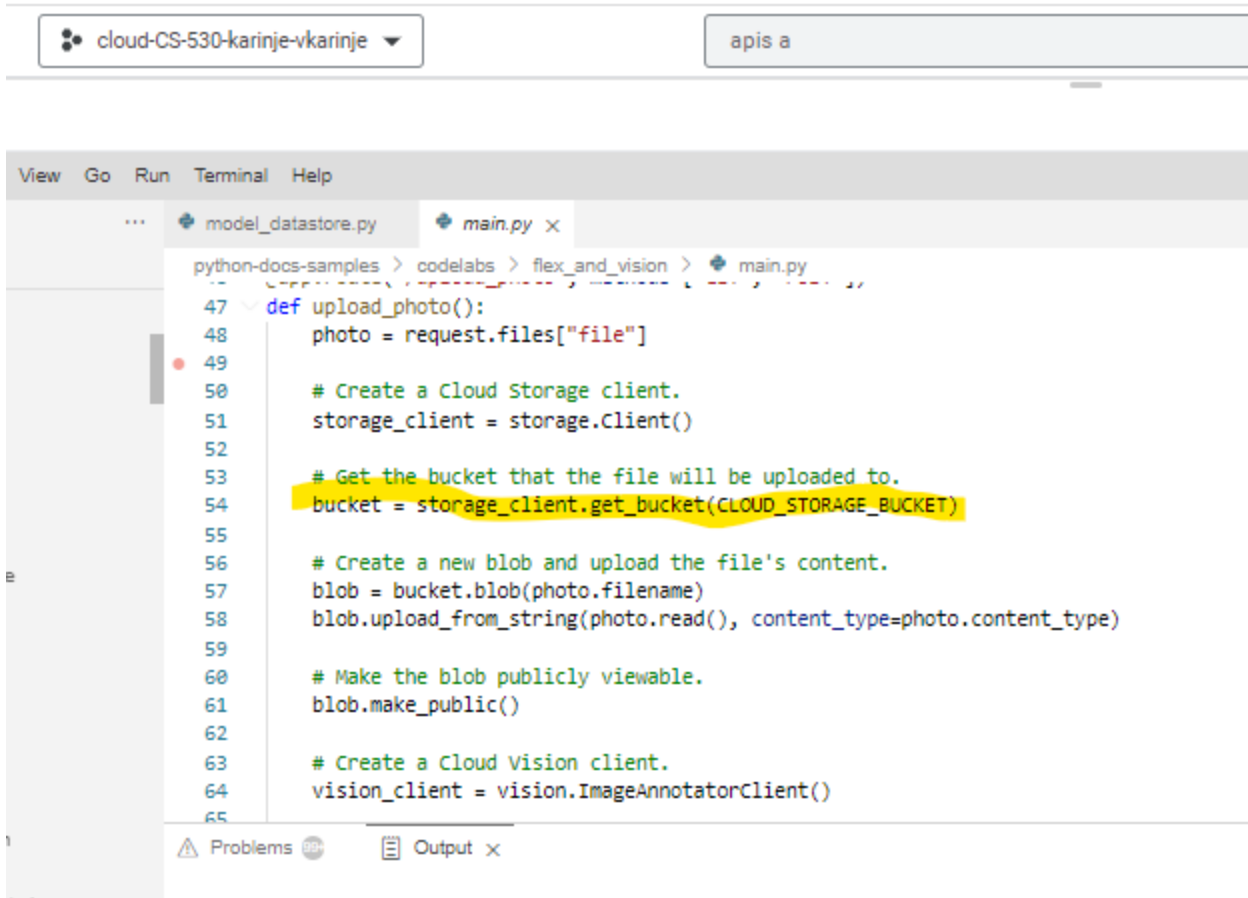
Problems Output x

Line 40

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

```
25
26 CLOUD_STORAGE_BUCKET = os.environ.get("CLOUD_STORAGE_BUCKET")
27
28
```





Line 26 , Line 54

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

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

The form field input of the type file specifies the uploaded photo.

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

```
source_uri = "gs://{}/{}".format(CLOUD_STORAGE_BUCKET, blob.name)
```

```
# 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)
```

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

Ans: vision\_client.face\_detection(image=image)

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

blob\_name, image\_public\_url, timestamp, joy

```
# Construct the new entity using the key. Set dictionary val
# keys blob_name, storage_public_url, timestamp, and joy.
entity = datastore.Entity(key)
entity["blob_name"] = blob.name
entity["image_public_url"] = blob.public_url
entity["timestamp"] = current_datetime
entity["joy"] = face_joy
```

- What happens at the end of the upload\_photo route?

It redirects to home page

## Clean up

```
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje) $ gcloud iam service-accounts delete cs430mlapis@$(GOOGLE_CLOUD_PROJECT).iam.gserviceaccount.com
You are about to delete service account [cs430mlapis@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com].

Do you want to continue (Y/n)? Y

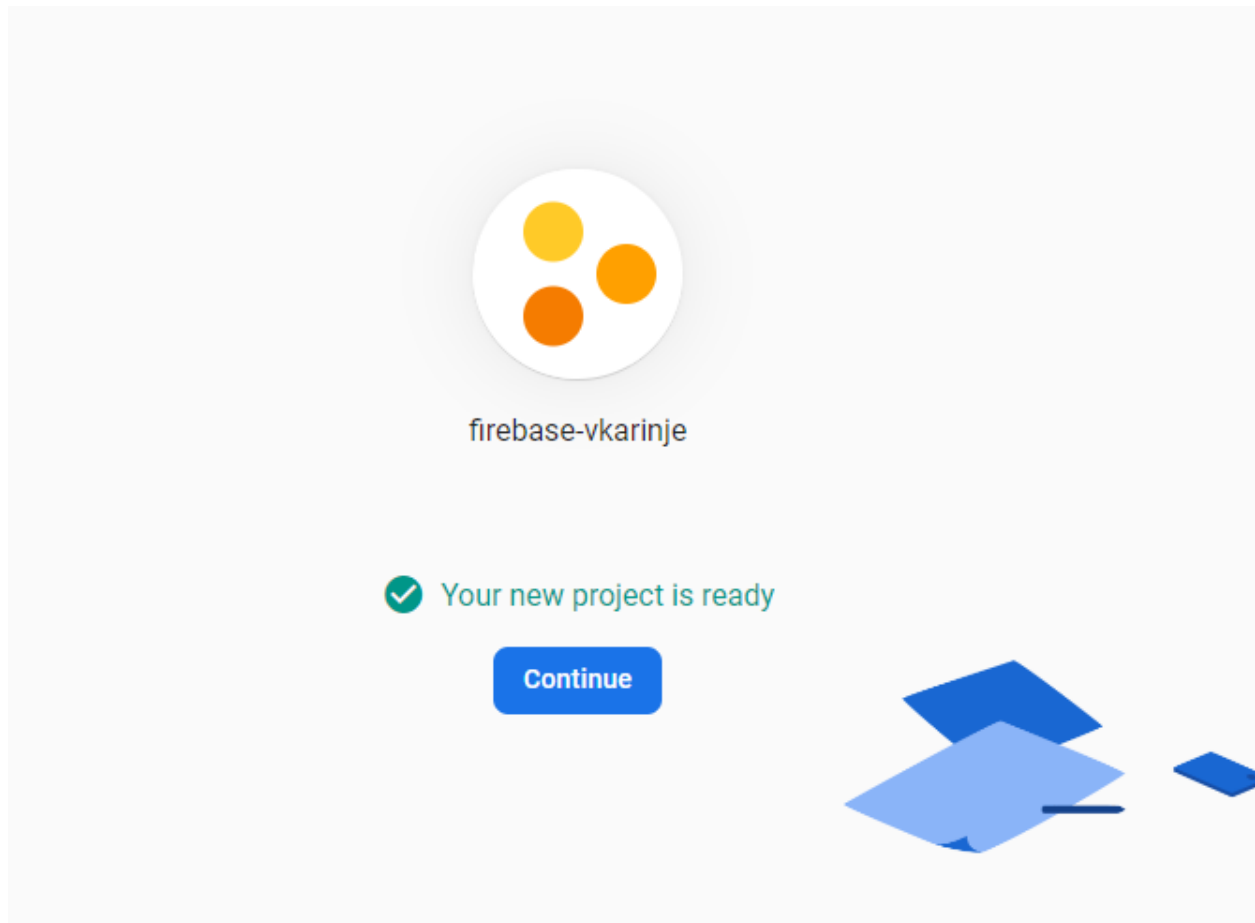
deleted service account [cs430mlapis@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com]
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje) $ gcloud iam service-accounts delete cs430flex@$(GOOGLE_CLOUD_PROJECT).iam.gserviceaccount.com
You are about to delete service account [cs430flex@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com].

Do you want to continue (Y/n)? Y

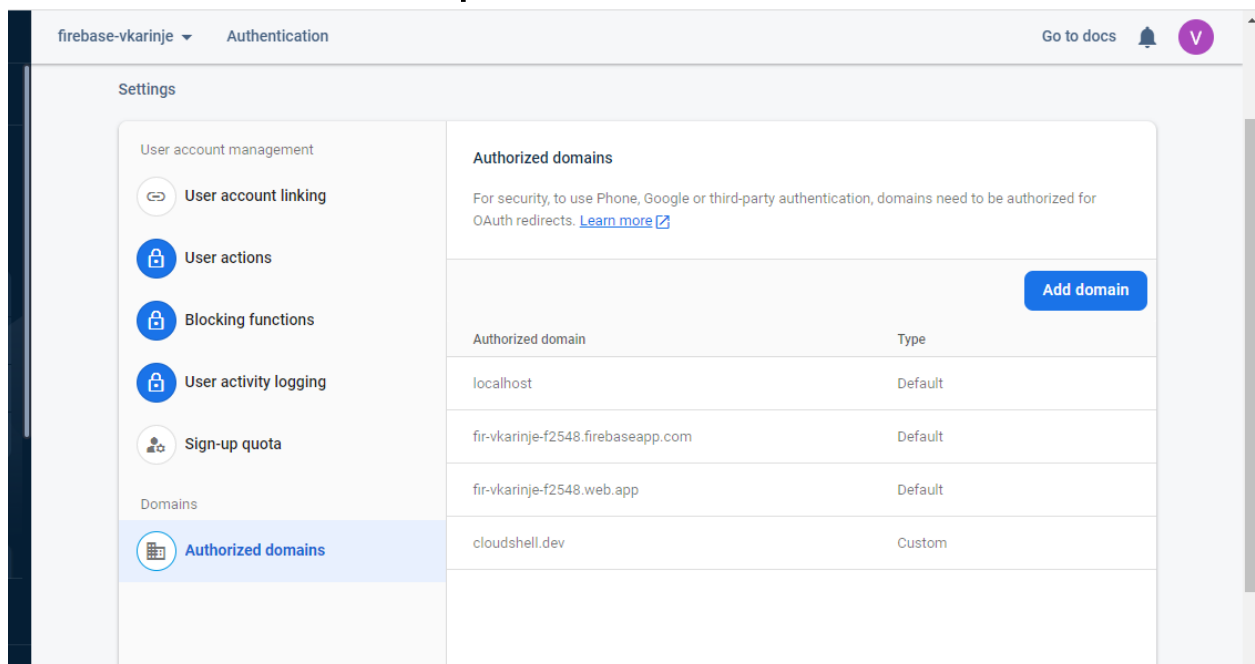
deleted service account [cs430flex@cloud-cs-530-karinje-vkarinje.iam.gserviceaccount.com]
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje) $ rm /home/${USER}/cs430flex.json /home/${USER}/cs430mlapis.json
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje) $ gcloud projects remove-iam-policy-binding $(GOOGLE_CLOUD_PROJECT) --member=serviceAccount:cs430flex@$(GOOGLE_CLOUD_PROJECT).iam.gserviceaccount.com --role=roles/storage.admin
SUCCESS (gcloud.projects.remove-iam-policy-binding) Policy binding with the specified principal, role, and condition not found!
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje) $ gcloud projects remove-iam-policy-binding $(GOOGLE_CLOUD_PROJECT) --member=serviceAccount:cs430flex@$(GOOGLE_CLOUD_PROJECT).iam.gserviceaccount.com --role=roles/datastore.user
SUCCESS (gcloud.projects.remove-iam-policy-binding) Policy binding with the specified principal, role, and condition not found!
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje) $ gsutil -m rm -r gs://$(CLOUD_STORAGE_BUCKET)
Removing gs://vkarinje-bucket/IMG_0612.HEIC#1669082448212137...
Removing gs://vkarinje-bucket/SportsBloopers2016.mp4#1669080128042703...
Removing gs://vkarinje-bucket/IMG_3765.jpg#1669082959892810...
/ (3/3 objects) 100% Done
Operation completed over 3 objects.
Removing gs://vkarinje-bucket/...
(env) vkarinje@cloudshell:~/python-docs-samples/codelabs/flex_and_vision (cloud-cs-530-karinje-vkarinje) $ ||
```

## 08.3g: Firebase

## Project setup



## Authentication setup



Answer the following questions for your lab notebook

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

Ans: localhost, fir-vkarinje-f2548.firebaseio.com, fir-vkarinje-f2548.web.app

## CLI setup

```
CLOUD SHELL
Terminal (firebase-vkarinje) + - Open Editor

vkarinje@cloudshell:~ (firebase-vkarinje)$ git clone https://github.com/firebase/codelab-friendlychat-web
Cloning into 'codelab-friendlychat-web'...
remote: Enumerating objects: 9796, done.
remote: Counting objects: 100% (3429/3429), done.
remote: Compressing objects: 100% (891/891), done.
remote: Total 9796 (delta 2864), reused 3021 (delta 2511), pack-reused 6367
Receiving objects: 100% (9796/9796), 4.62 MiB | 14.25 MiB/s, done.
Resolving deltas: 100% (7122/7122), done.
vkarinje@cloudshell:~ (firebase-vkarinje)$ npm -g install firebase-tools
npm WARN deprecated uuid@2.0.3: Please upgrade to version 7 or higher. Older versions may use Math.random() in certain circumstances, which is known to be problematic. See https://v8.dev/blog/math-random for details.
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.com/request/request/issues/3142
npm WARN deprecated debug@4.1.1: Debug versions >=2.2.0 <3.2.7 || >=4 <4.3.1 have a low-severity ReDoS regression when used in a Node.js environment. It is recommended you upgrade to 3.2.7 or 4.3.1 (https://github.com/visionmedia/debug/issues/797)
npm WARN deprecated har-validator@5.1.3: this library is no longer supported
changed 686 packages, and audited 687 packages in 53s

41 packages are looking for funding
  run `npm fund` for details

6 vulnerabilities (5 moderate, 1 high)

To address issues that do not require attention, run:
  npm audit fix

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.
vkarinje@cloudshell:~ (firebase-vkarinje)$ npm notice
vkarinje@cloudshell:~ (firebase-vkarinje)$ npm notice New npm version available! 3.10.1 -> 9.1.2
vkarinje@cloudshell:~ (firebase-vkarinje)$ npm notice Change log: https://github.com/npm/cli/releases/tag/v9.1.2
vkarinje@cloudshell:~ (firebase-vkarinje)$ npm notice Run npm install -g npm@9.1.2 to update!
vkarinje@cloudshell:~ (firebase-vkarinje)$ npm notice
vkarinje@cloudshell:~ (firebase-vkarinje)$ firebase --version
11.16.1
vkarinje@cloudshell:~ (firebase-vkarinje)$

vkarinje@cloudshell:~ (firebase-vkarinje)$ firebase --version
11.16.1
vkarinje@cloudshell:~ (firebase-vkarinje)$ firebase logout
No need to logout, not logged in
vkarinje@cloudshell:~ (firebase-vkarinje)$ firebase login --no-localhost
i Firebase optionally collects CLI and Emulator Suite usage and error reporting information to help improve our products. Data is collected in accordance with Google's privacy policy (https://policies.google.com/privacy) and is not used to identify you.

i Allow Firebase to collect CLI and Emulator Suite usage and error reporting information? Yes
i To change your data collection preference at any time, run 'firebase logout' and log in again.

To sign in to the Firebase CLI:

1. Take note of your session ID:

280DB

2. Visit the URL below on any device and follow the instructions to get your code:

https://auth.firebase.tools/login?code_challenge=Wa1hgZ37oqMG0ogY7aJ_YTR14CDdy8IMRQ11P9RyeIsession=280dbf92-c2ac-4a1a-b3f8-0845a089f5a4&attest=ms0x15pEEScub2HqeswHgG6jklF5zKJ6T-UxMqcCoYo

3. Paste or enter the authorisation code below once you have it:

i Enter authorisation code: 4/0AfgexVteSDw-bd8eY1aQktmLRXigOL4Xu0cWjbf9QmSpV9Wx2w7WVIAiwUA2ecR70LDWA

✓ Success! Logged in as vkarinje@pdx.edu
vkarinje@cloudshell:~ (firebase-vkarinje)$

vkarinje@cloudshell:~/codelab-friendlychat-web/web-start (firebase-vkarinje)$ firebase use --add
? Which project do you want to add? firebase-vkarinje
? What alias do you want to use for this project? (e.g. staging) default

Created alias default for firebase-vkarinje.
Now using alias default (firebase-vkarinje)
vkarinje@cloudshell:~/codelab-friendlychat-web/web-start (firebase-vkarinje)$ |
```

## Bundling with Webpack

```

vkarinje@cloudshell:~/codelab-friendlychat-web/web-start (firebase-vkarinje)$ npm install

added 244 packages, and audited 245 packages in 15s

20 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
vkarinje@cloudshell:~/codelab-friendlychat-web/web-start (firebase-vkarinje)$ npm run start

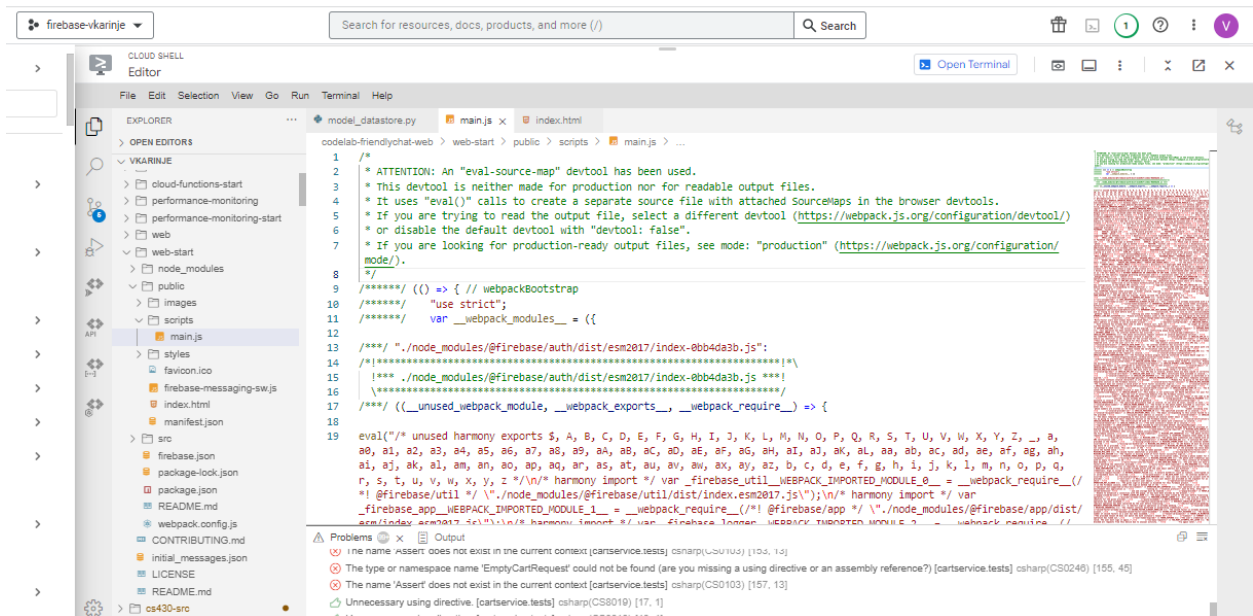
> friendlychat@1.0.0 start
> webpack --watch --progress

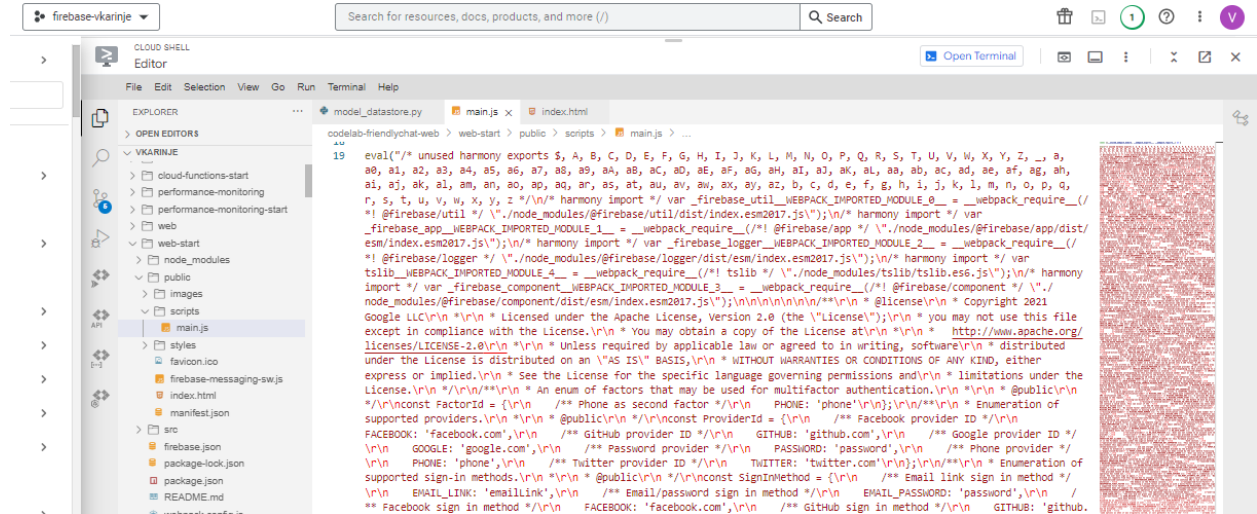
asset main.js 4.21 MiB [emitted] (name: main)
runtime modules 617 bytes 3 modules
modules by path ./node_modules/ 1.58 MiB
  modules by path ./node_modules/@firebase/ 1.56 MiB
    modules by path ./node_modules/@firebase/auth/dist/esm2017/*.js 378 KiB 2 modules
    + 10 modules
  modules by path ./node_modules/firebase/ 1.17 KiB
    ./node_modules/firebase/app/dist/index.esm.js 827 bytes [built] [code generated]
    + 5 modules
  modules by path ./node_modules/idb/build/*.js 10.4 KiB
    ./node_modules/idb/build/index.js 3.09 KiB [built] [code generated]
    ./node_modules/idb/build/wrap-idb-value.js 7.32 KiB [built] [code generated]
    ./node_modules/tslib/tslib.es6.js 12 KiB [built] [code generated]
modules by path ./src/*.js 11.1 KiB
  ./src/index.js 10.4 KiB [built] [code generated]
  ./src/firebase-config.js 719 bytes [built] [code generated]
webpack 5.75.0 compiled successfully in 1751 ms

asset firebase-messaging-sw.js 1.74 KiB [emitted] (name: main)
./src/firebase-messaging-sw.js 55 bytes [built] [code generated]
webpack 5.75.0 compiled successfully in 180 ms

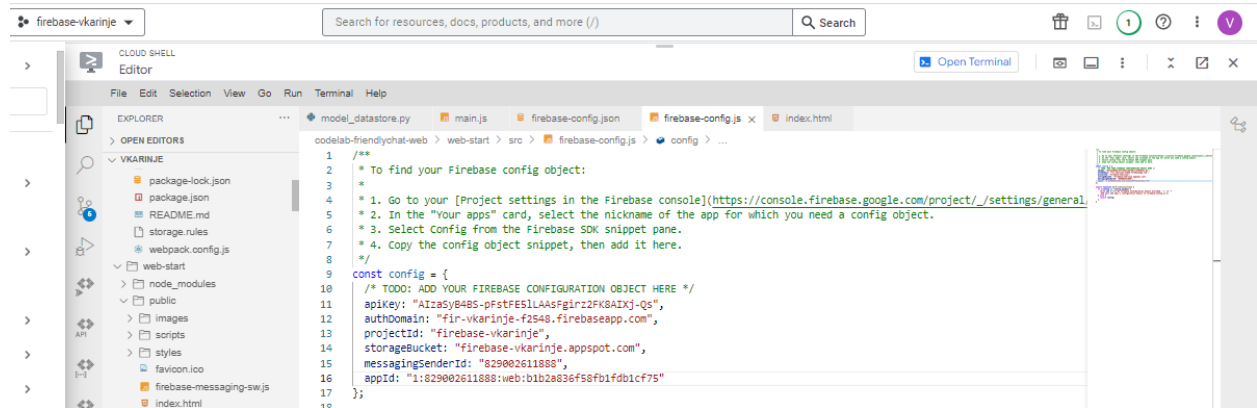
```

- Take a screenshot of the first 10 lines of the produced file.





## Configure Firebase within application



The screenshot shows a Cloud Shell terminal window with the following commands and output:

```
vkarinje@cloudshell:~/codelab-friendlychat-web/web-start (firebase-vkarinje) $ npm install
added 244 packages, and audited 245 packages in 15s

20 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
vkarinje@cloudshell:~/codelab-friendlychat-web/web-start (firebase-vkarinje) $ npm run start

> friendlychat@1.0.0 start
> webpack --watch --progress

asset main.js 4.21 MiB [emitted] (name: main)
runtime modules 617 bytes 3 modules
modules by path ./node_modules/ 1.58 MiB
  modules by path ./node_modules/@firebase/ 1.56 MiB
    modules by path ./node_modules/@firebase/auth/dist/esm2017/*.js 378 KiB 2 modules
    + 10 modules
  modules by path ./node_modules/firebase/ 1.17 KiB
    ./node_modules/firebase/app/dist/index.esm.js 827 bytes [built] [code generated]
    + 5 modules
  modules by path ./node_modules/idb/build/*.js 10.4 KiB
    ./node_modules/idb/build/index.js 3.09 KiB [built] [code generated]
    ./node_modules/idb/build/wrap-idb-value.js 7.32 KiB [built] [code generated]
    ./node_modules/tslib/tslib.es6.js 12 KiB [built] [code generated]
modules by path ./src/*.js 11.1 KiB
  ./src/index.js 10.4 KiB [built] [code generated]
  ./src/firebase-config.js 719 bytes [built] [code generated]
webpack 5.75.0 compiled successfully in 1751 ms

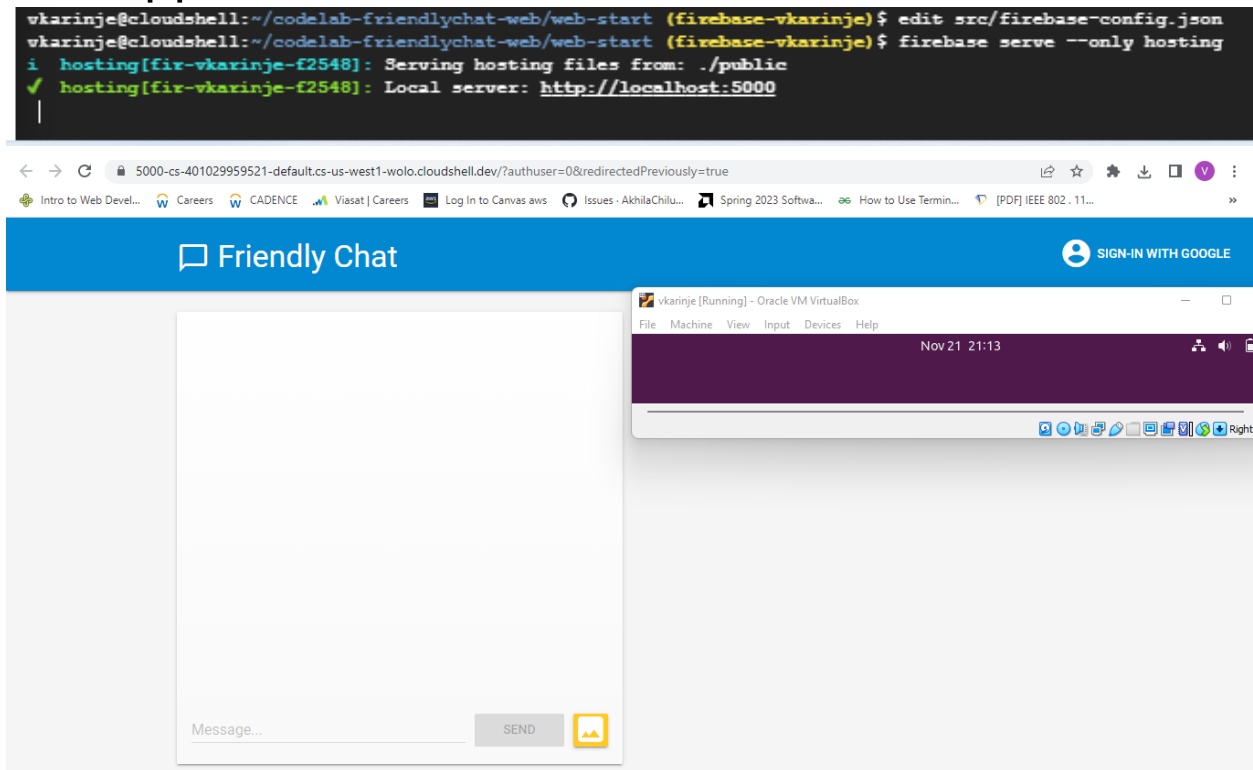
asset firebase-messaging-sw.js 1.74 KiB [emitted] (name: main)
./src/firebase-messaging-sw.js 55 bytes [built] [code generated]
webpack 5.75.0 compiled successfully in 180 ms
asset main.js 4.21 MiB [emitted] (name: main)
cached modules 1.59 MiB [cached] 22 modules
runtime modules 617 bytes 3 modules
  ./src/firebase-config.js 998 bytes [built] [code generated]
webpack 5.75.0 compiled successfully in 143 ms
assets by status 4.21 MiB [cached] 1 asset
cached modules 1.59 MiB (javascript) 617 bytes (runtime) [cached] 25 modules
  ./src/firebase-config.js 998 bytes [built]
webpack 5.75.0 compiled successfully in 84 ms
```

## Initialize Firebase within application

The screenshot shows a Cloud Shell Editor window with the following code in `index.js`:

```
339 imageButtonElement.addEventListener('click', function (e) {
340   e.preventDefault();
341   mediaCaptureElement.click();
342 });
343 mediaCaptureElement.addEventListener('change', onMediaFileSelected);
344
345 const firebaseAppConfig = getFirebaseConfig();
346 // TODO 0: Initialize Firebase
347 initializeApp(firebaseAppConfig);
348
349 // TODO 12: Initialize Firebase Performance Monitoring
350
351 initFirebaseAuth();
352 loadMessages();
353
```

# Test application



## Add authentication

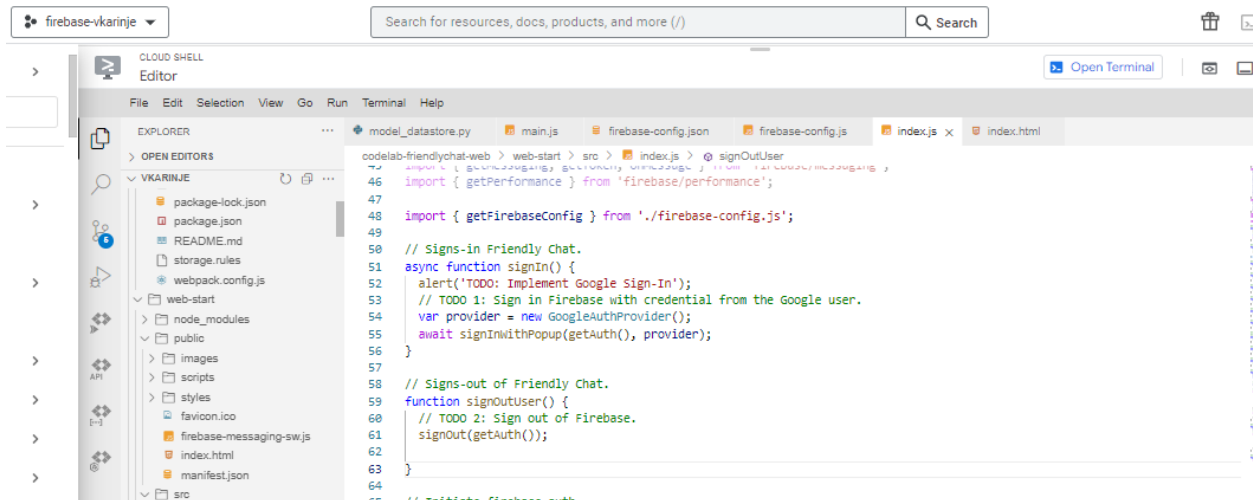
- What missing functions deal with user authentication?

`initFirebaseAuth()`, `signIn`, `isUserSignedIn`, `signOut`, deal with user authentication.

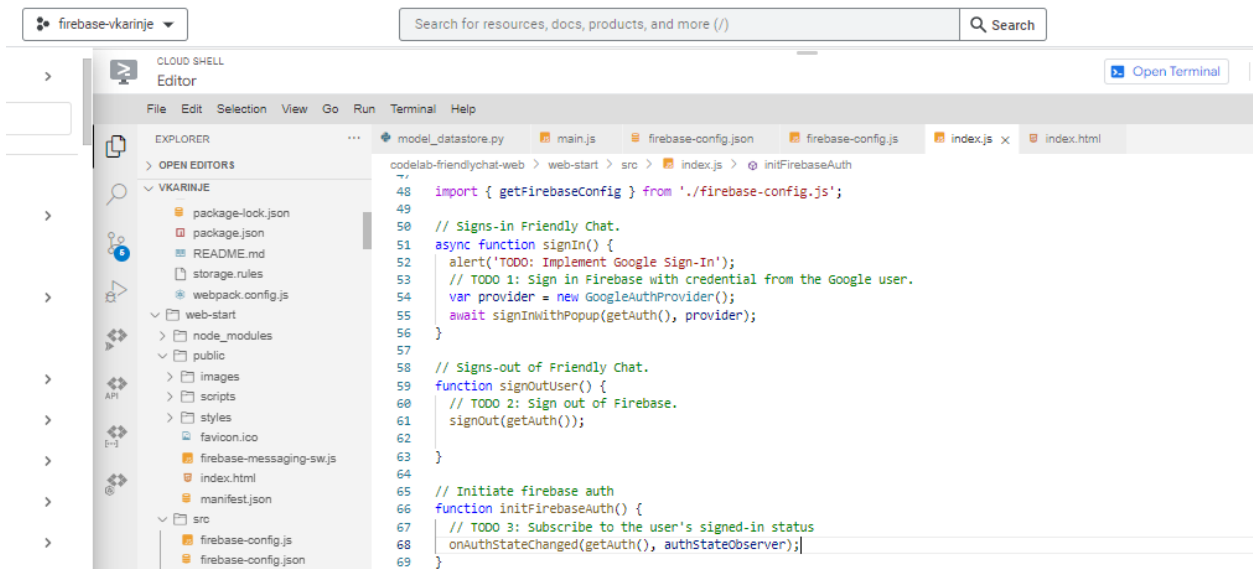
- What missing functions deal with sending and receiving messages?

`saveMessage`, `loadMessages`, `deleteMessage`, `displayMessage`, `saveImageMessage` deal with sending and receiving messages.





## Update UI



Answer the following questions:

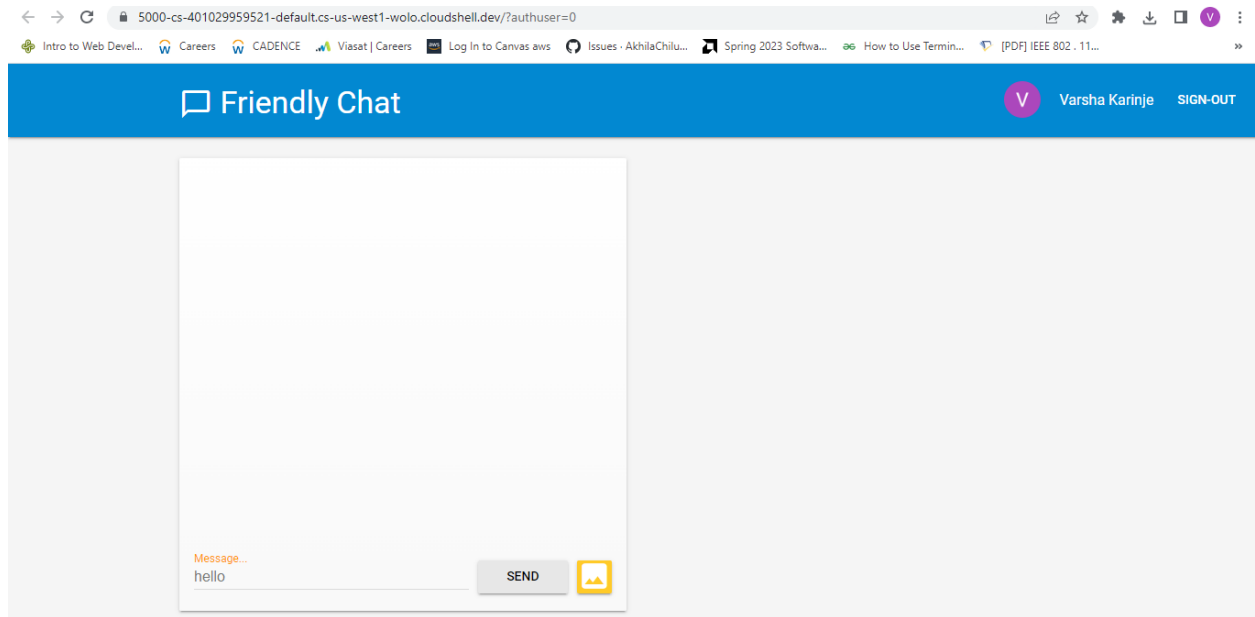
- What are the names of the elements that are hidden when the user is signed out?

userNameElement, userPicElement, signOutButtonElement are hidden when the user is signed out.

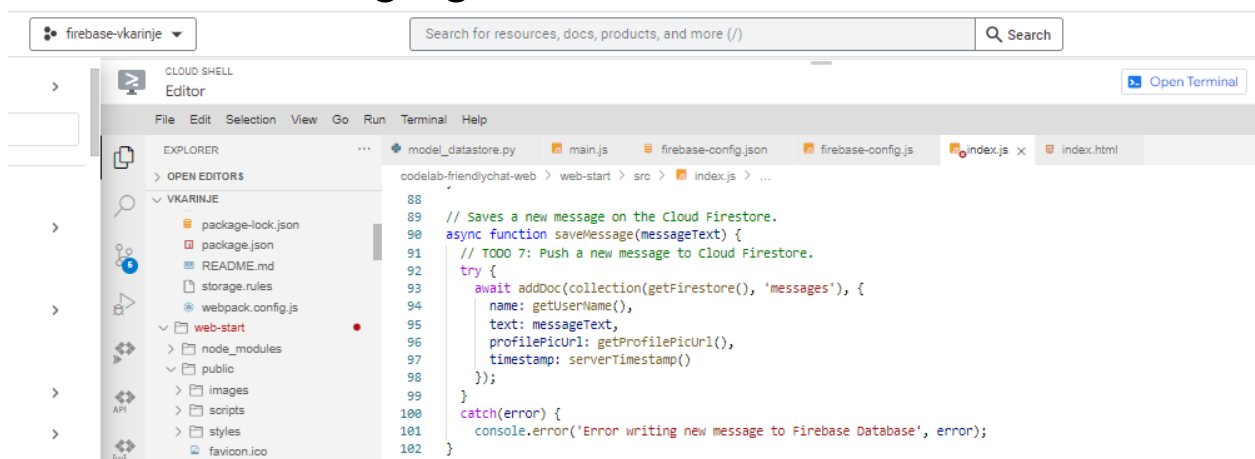
- What is the name of the element that is not hidden when the user is signed out?

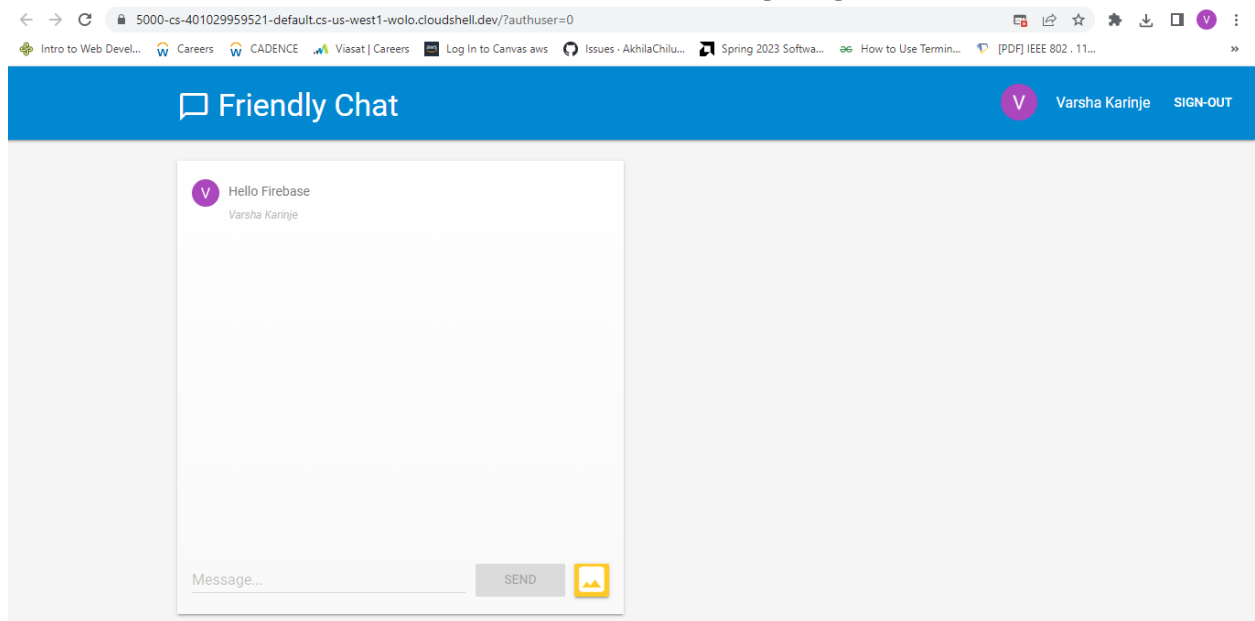
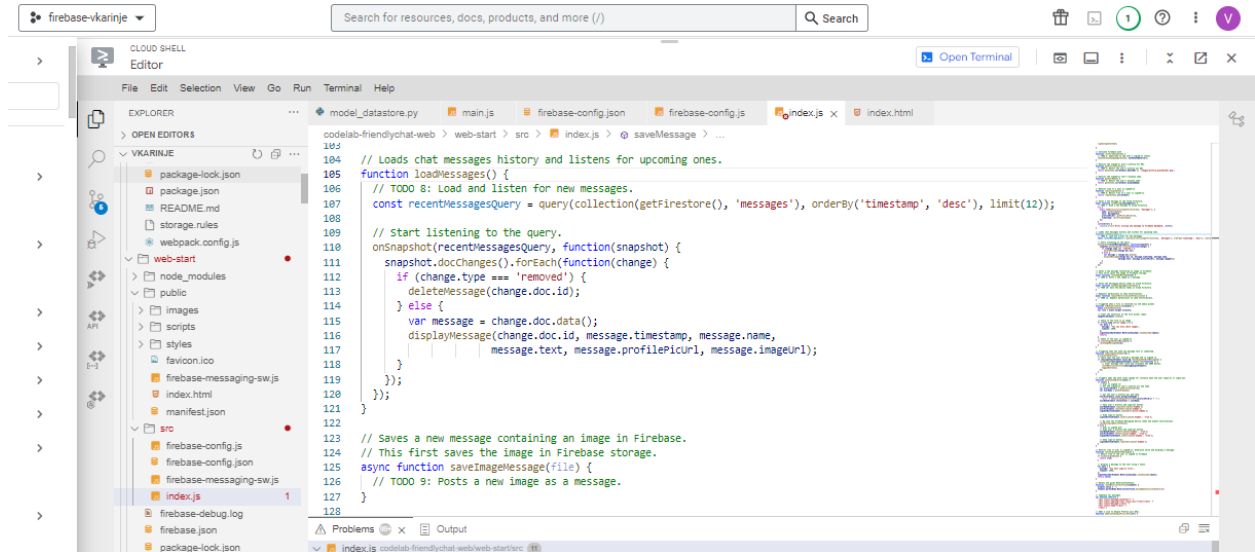
signInButtonElement



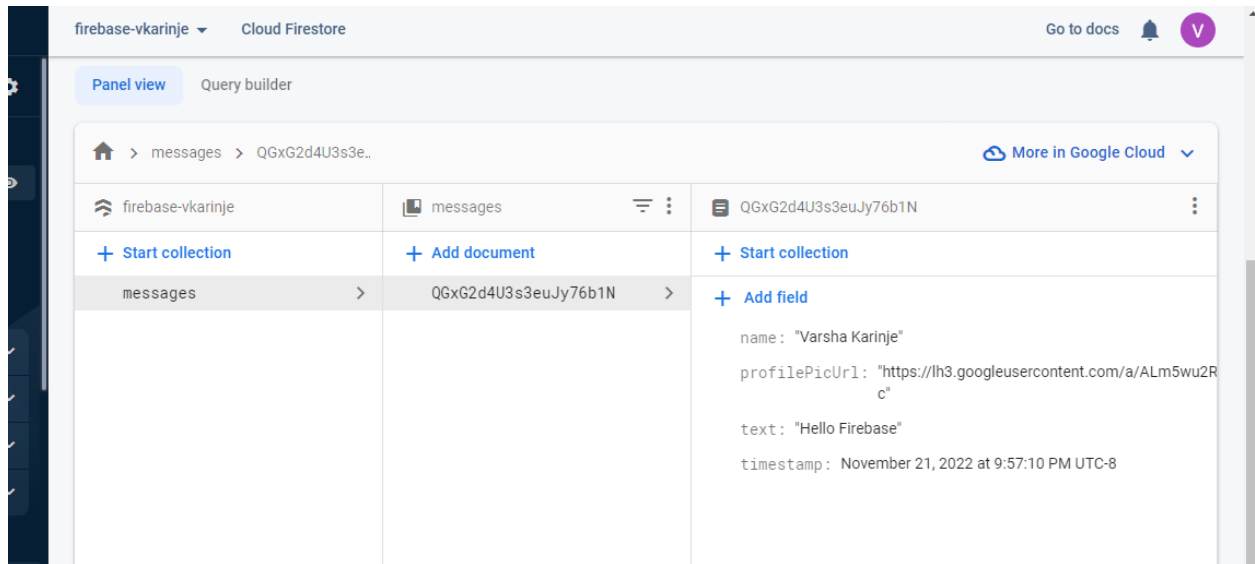


## Add text messaging



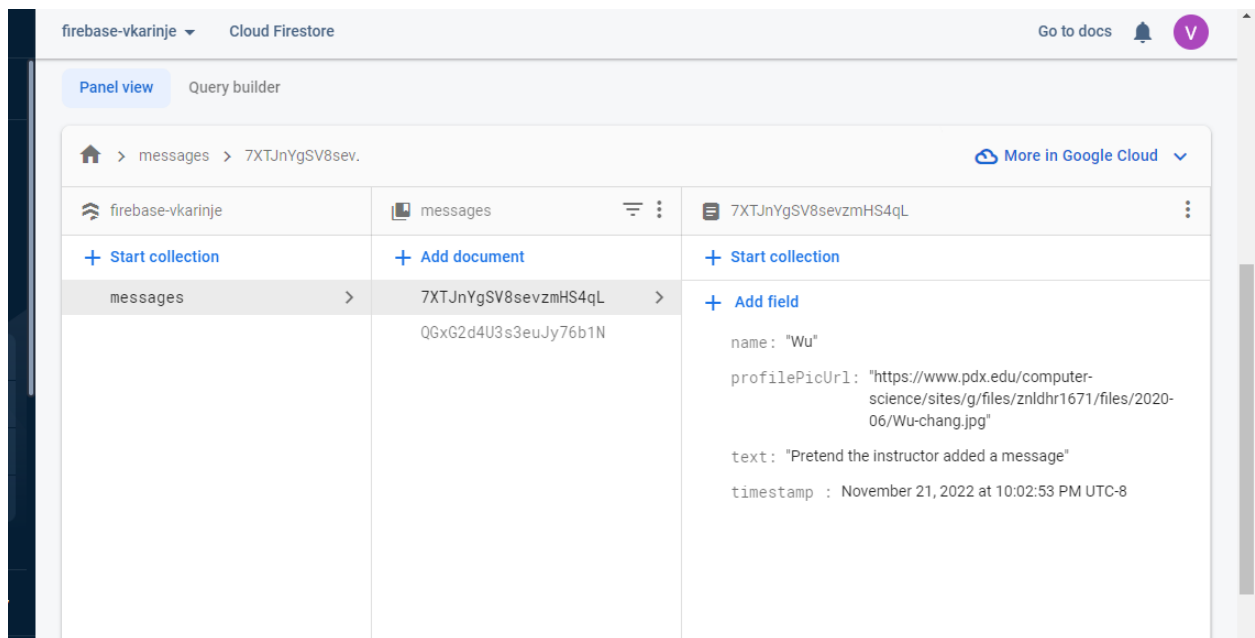


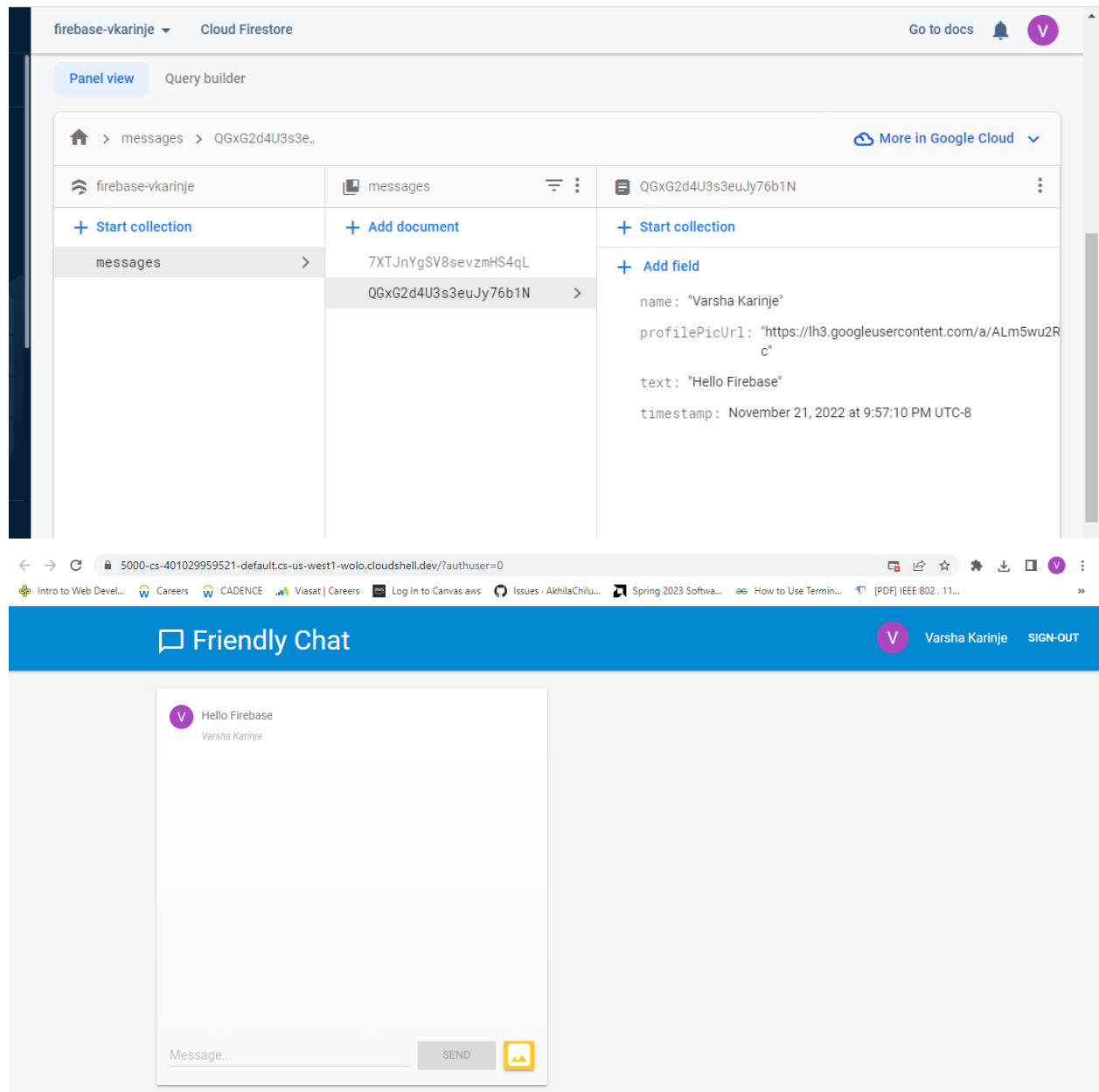
- Include a screenshot of the message and its fields in the database for your lab notebook



## Manual message insertion

- Include a screenshot of the application with its two messages for your lab notebook





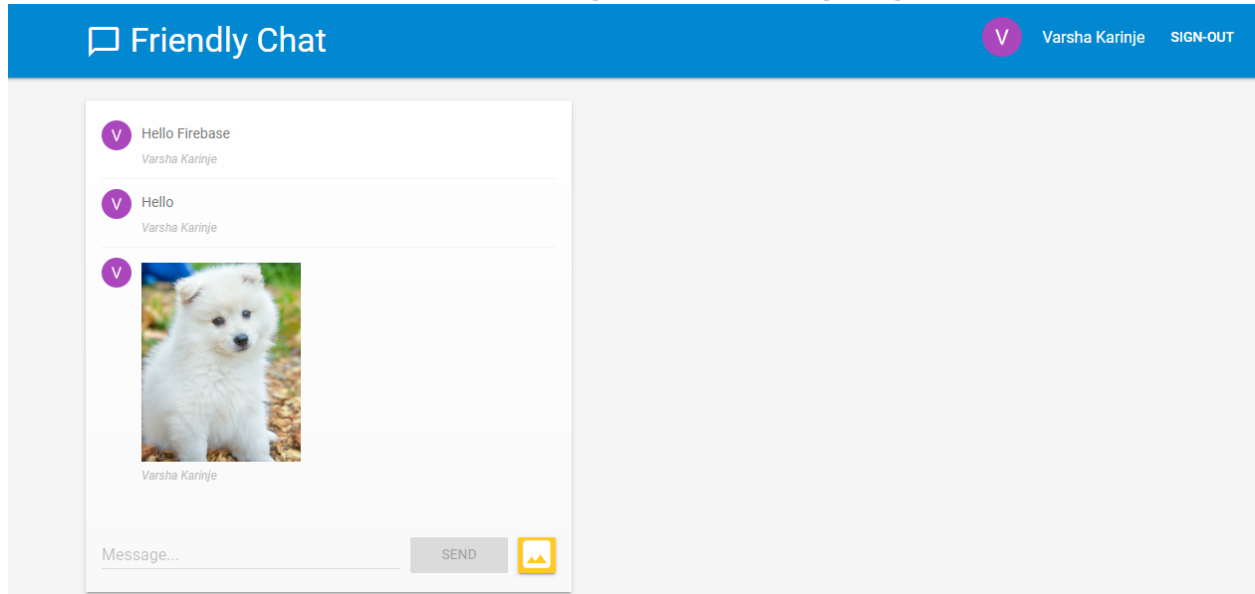
## Add image messaging

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

- What is the URL of the image that is first shown in the UI as the message is loading?

<https://lh3.googleusercontent.com/a/ALm5wu2RgEPyN4e5L3uRdAO1yz6Bdw6dXyfX8Ui66AVR=s96-c>

# Test application with image messaging



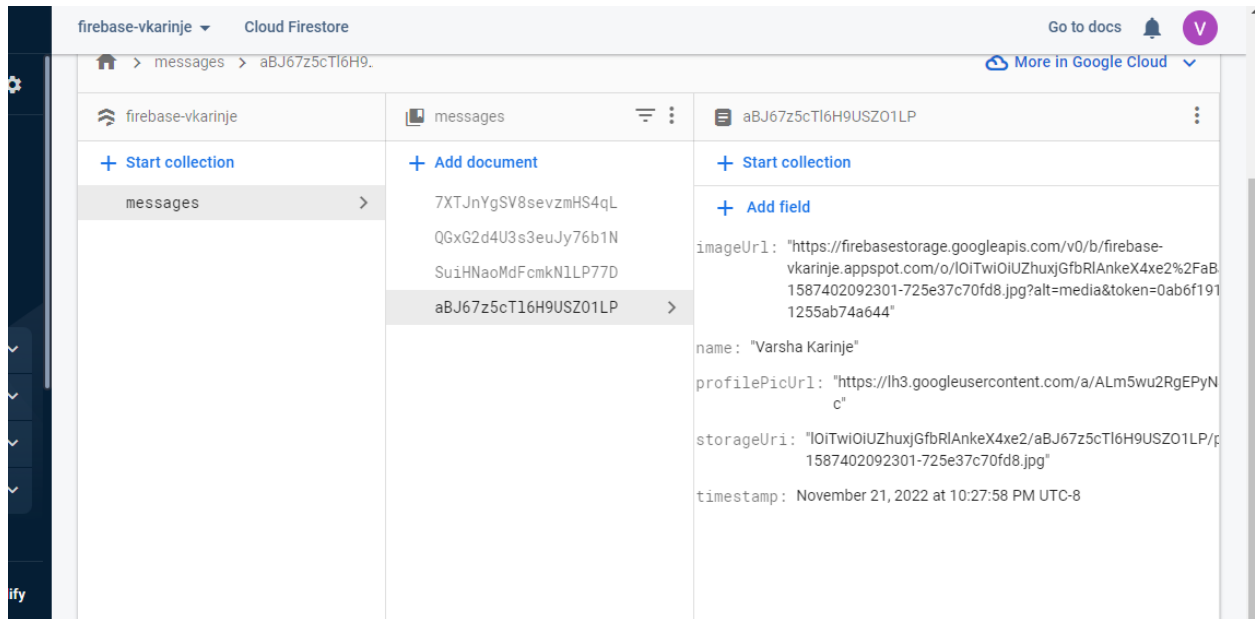
Answer the following questions:

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

There are extra fields such as imageUrl, name, profilePicUrl, storageUri, timestamp for image document.

For text documents the fields are name, profilePicUrl, text, timestamp.

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



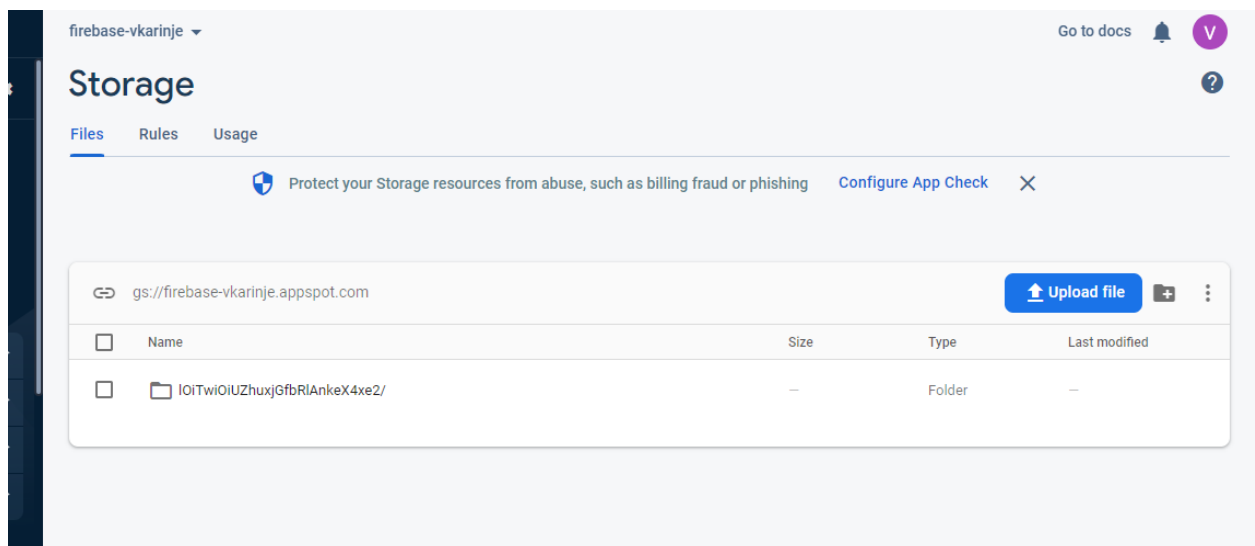
The image can be found at

"https://firebasestorage.googleapis.com/v0/b/firebase-vkarinje.appspot.com/o/IOiTwIoiUZhuxjGfbRIAnkeX4xe2%2FaBJ67z5cTl6H9USZ01LP%2Fphoto-1587402092301-725e37c70fd8.jpg?alt=media&token=0ab6f191-01f5-4345-bd4b-1255ab74a644"

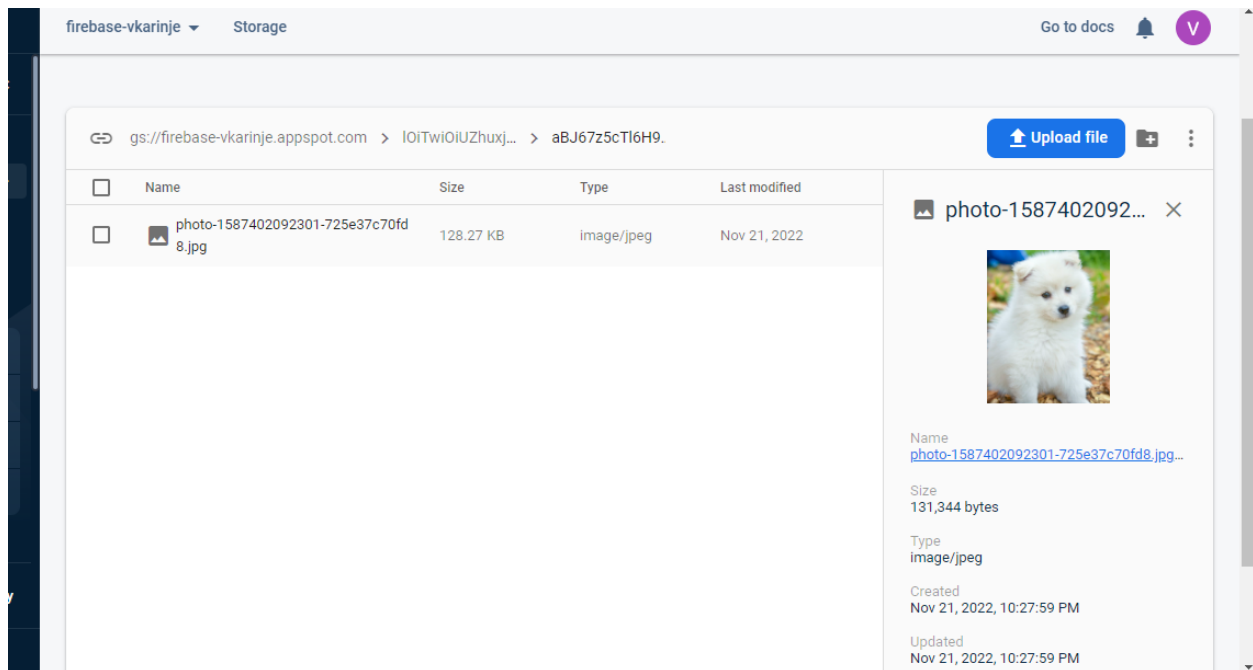
Storage location is

"IOiTwIoiUZhuxjGfbRIAnkeX4xe2/aBJ67z5cTl6H9USZ01LP/photo-1587402092301-725e37c70fd8.jpg"

- Take a screenshot of the image in the storage bucket for your lab notebook.







## Deploy application

Answer the following questions:

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

The application is going to be served from the public directory.

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

The `max-age =0` setting in the Cache-Control setting will fetch the latest versions of HTML and Javascript files. If no-cache attribute is defined it will always fetch the latest version of the files. The Cache-Control tell the browser not to store anything.

```

vkarinje@cloudshell:~/codelab-friendlychat-web/web-start (firebase-vkarinje)$ firebase deploy --except functions

== Deploying to 'firebase-vkarinje'...

i deploying hosting
i hosting[fir-vkarinje-f2548]: beginning deploy...
i hosting[fir-vkarinje-f2548]: found 8 files in ./public
✓ hosting[fir-vkarinje-f2548]: file upload complete
i hosting[fir-vkarinje-f2548]: finalising version...
✓ hosting[fir-vkarinje-f2548]: version finalised
i hosting[fir-vkarinje-f2548]: releasing new version...
✓ hosting[fir-vkarinje-f2548]: release complete

✓ Deploy complete!

Project Console: https://console.firebase.google.com/project/firebase-vkarinje/overview
Hosting URL: https://fir-vkarinje-f2548.web.app
vkarinje@cloudshell:~/codelab-friendlychat-web/web-start (firebase-vkarinje)$ ||

```

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

