

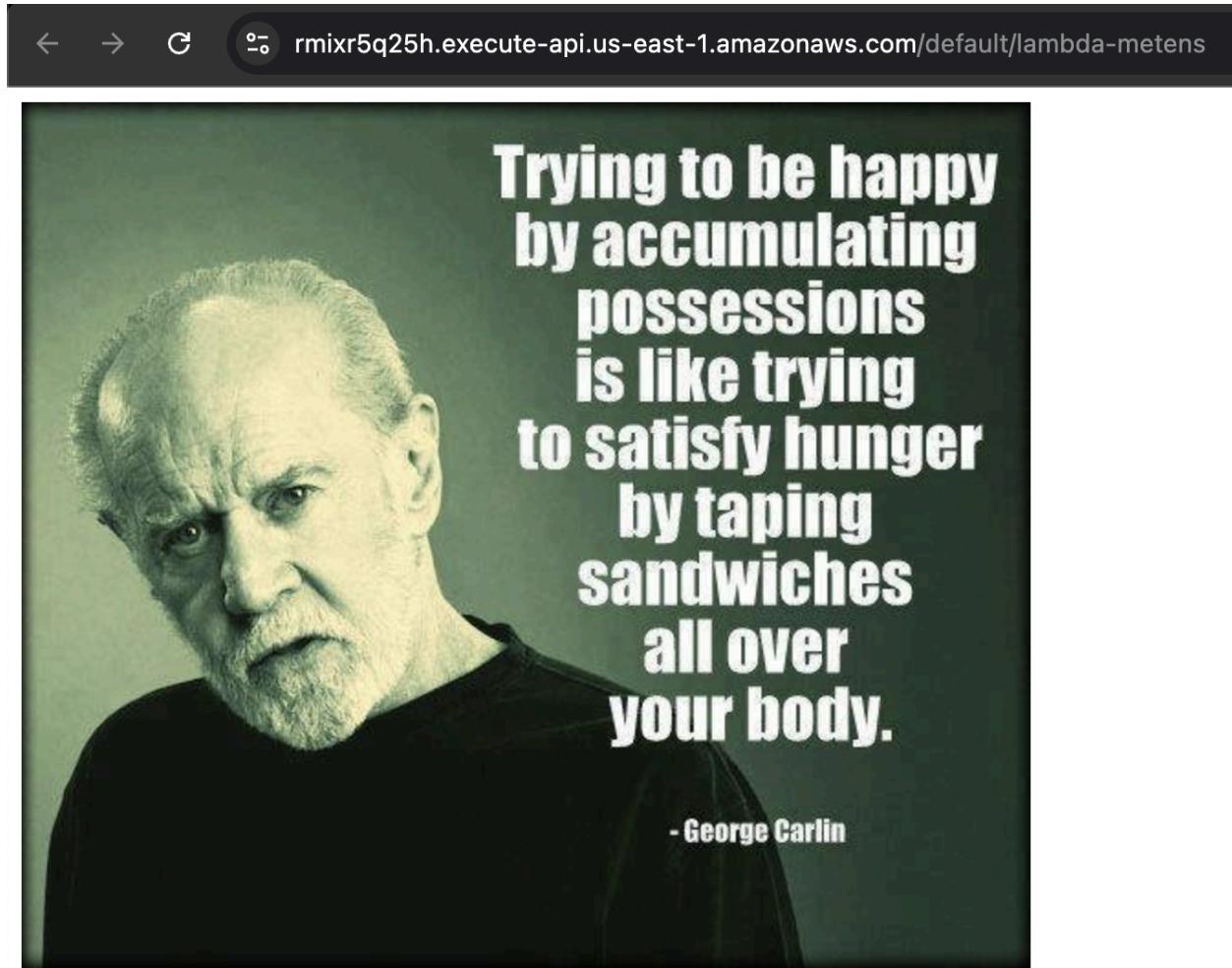
Week #8 Labs

8.1a: API Gateway	2
4. Test Code	2
8. Test Code	3
8.2a: Lambda, API Gateway Guestbook	4
10. Deploy API to production and view entries	4
12. API endpoint for signing (2)	4
14. Deploy API to production and sign	5
16. Configure and Deploy the Frontend	6
8.2g: Cloud Functions, API Gateway Guestbook	6
10. Create the API Gateway	6
11. Test the API via Python Requests (GET)	6
12. Test the API via Python Requests (POST)	7
15. Version #1: Local File System	7
16. Version #2: Google Cloud Storage Bucket	8
8.3g: OAuth2 Guestbook	9
14. Visit the Application	9
15. Secrets Manager Deployment	12
16 Removing Access	13
8.4g: Firebase	13
4. Authentication setup	13
8. Bundling with Webpack	14
12. Add Authentication	14
13. Update UI	15
16. Test Application with Text Messaging	15
17. Manual Message Insertion	16
18. Adding image messaging	16
19. Test application with image messaging	16
20. Deploy the application	17

8.1a: API Gateway

4. Test Code





8. Test Code



```
nathanmetens — ssh metens@linux.cs.pdx.edu — 114x28
metens@ada:~$ curl https://7gm9s5tbeh.execute-api.us-east-1.amazonaws.com/default/gettime-metens
{"currentTime": "2024-11-20 08:36:14.915247"}metens@ada:~$
metens@ada:~$
```

8.2a: Lambda, API Gateway Guestbook

10. Deploy API to production and view entries

The screenshot shows a web browser window with the URL `/Users/nathanmetens/Desktop/aws_lambda/frontend/src/index.html`. The page displays a guestbook interface with the following elements:

- Guestbook**: A section containing three input fields:
 - Name:
 - Email:
 - Message:
- A **Sign** button located below the message input field.
- Entries**: A section displaying two entries:
 - "Nathan Metens" <metens@pdx.edu>
signed on 2024-11-04 19:35:42.589998
Hello DynamoDB
 - "Nathan Metens" <metens@pdx.edu>
signed on 2024-11-04 19:37:26.954167
Hello DynamoDB

12. API endpoint for signing (2)

Create resource

- /
- /entries
 - GET
 - OPTIONS
 - /entry
 - POST

entry - POST method test results

Request	Latency ms
/entry	3430

Status
200

Response body

```
[{"message": "Hello DynamoDB", "date": "2024-11-04 19:35:42.589998", "email": "metens@pdx.edu", "name": "\"Nathan Metens\""}, {"message": "Hello Docker Dynamodb", "date": "2024-11-04 19:37:26.954167", "email": "metens@pdx.edu", "name": "\"Nathan Metens\""}, {"message": "Hello Dynamo", "date": "2024-11-04 19:48:10.936737", "email": "metens@pdx.edu", "name": "\"Nathan Metens\""}, {"message": "Hello Docker Dynamodb", "date": "2024-11-05 00:03:08.300858", "email": "metens@pdx.edu", "name": "Nathan Metens"}, {"message": "Hello Docker DynamoDB", "date": "2024-11-05 01:11:55.896432", "email": "metens@pdx.edu", "name": "Nathan Metens"}, {"message": "Hello Cloud9!", "date": "2024-11-05 02:38:16.002604", "email": "metens@pdx.edu", "name": "Nathan Metens"}, {"message": "Hello EC2!", "date": "2024-11-05 04:39:52.560737", "email": "metens@pdx.edu", "name": "Nathan Metens"}, {"message": "Hello Elastic Beanstalk!", "date": "2024-11-06 05:41:14.756183", "email": "metens@pdx.edu", "name": "Nathan Metens"}, {"message": "Hello ECS!", "date": "2024-11-06 19:25:05.569209", "email": "metens@pdx.edu", "name": "Nathan Metens"}, {"message": "Hello API Gateway!", "date": "2024-11-25 04:23:55.443772", "email": "metens@pdx.edu", "name": "Nathan Metens"}]
```

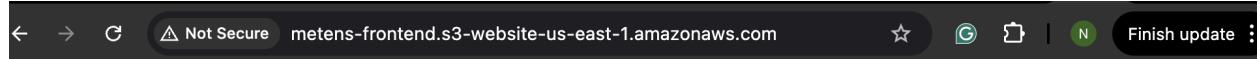
At the bottom of the response (the last element in the response body list), see “Hello API Gateway!” with date “2024-11-25”.

14. Deploy API to production and sign



Nathan Metens <metens@pdx.edu>
signed on 2024-11-25 04:35:18.193232
Hello API Gateway from local html!

16. Configure and Deploy the Frontend



Nathan Metens <metens@pdx.edu>
signed on 2024-11-25 04:35:18.193232
Hello API Gateway from local html!

Nathan Metens <metens@pdx.edu>
signed on 2024-11-25 05:13:18.834586
Hello S3, API Gateway and Lambda!

8.2g: Cloud Functions, API Gateway Guestbook

10. Create the API Gateway

```
metens@cloudshell:~/cs430-src/06_gcp_restapi_cloudfunctions (cloud-metens)$ gcloud api-gateway gateways describe gbapigw --location=us-central1
apiConfig: projects/660633817405/locations/global/apis/gbapi/configs/gbapiconfig
createTime: '2024-11-21T02:28:54.395697560Z'
defaultHostname: gbapigw-8fhobfwd.uc.gateway.dev
displayName: gbapigw
name: projects/cloud-metens/locations/us-central1/gateways/gbapigw
state: ACTIVE
updateTime: '2024-11-21T02:32:02.661781815Z'
```

The hostname: **gbapigw-8fhobfwd.uc.gateway.dev**

11. Test the API via Python Requests (GET)

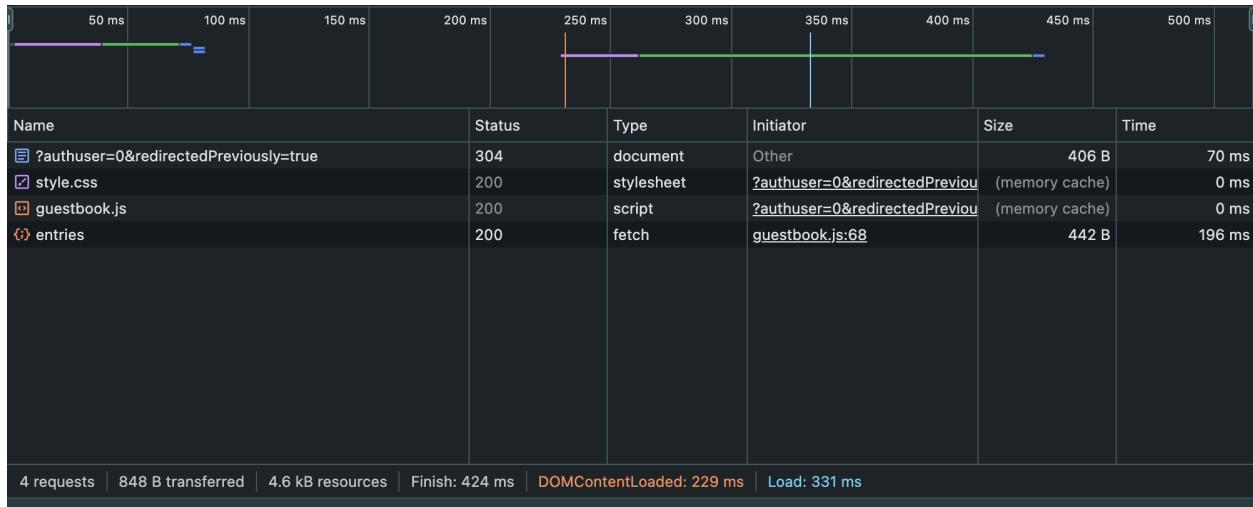
```
metens@cloudshell:~/cs430-src/06_gcp_restapi_cloudfunctions (cloud-metens)$ python3.12
Python 3.12.3 (main, Sep 11 2024, 14:17:37) [GCC 13.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> import requests
>>> resp = requests.get('https://us-central1-cloud-metens.cloudfunctions.net/entries')
>>> print(resp.status_code)
200
>>> print(resp.headers)
{
    "Content-Type": "application/json",
    "Access-Control-Allow-Origin": "*",
    "X-Cloud-Trace-Context": "38a82700bec1d3fe33f095e4c78b5bf;o=1",
    "Date": "Thu, 21 Nov 2024 02:50:07 GMT",
    "Server": "Google Frontend",
    "Content-Length": "117"
}
>>> print(resp.text)
[{"name": "nathan", "email": "metens@pdx.edu", "date": "2024-11-21 00:08:00+00:00", "message": "hello from entries"}
]
>>> print(resp.json())
[{"name": "nathan", "email": "metens@pdx.edu", "date": "2024-11-21 00:08:00+00:00", "message": "hello from entries"}]
>>> print(type(resp.json()))
<class 'list'>
>>> entries = resp.json()
>>> print(entries)
[{"name": "nathan", "email": "metens@pdx.edu", "date": "2024-11-21 00:08:00+00:00", "message": "hello from entries"}]
>>> for entry in entries:
...     print(f"Name: {entry.get('name')}; Email: {entry.get('email')} ; Date: {entry.get('date')} ; Message: {entry.get('message')}")
...     print("-----")
File "<stdin>", line 2
    print(f"Name: {entry.get('name')}; Email: {entry.get('email')} ; Date: {entry.get('date')} ; Message: {entry.get('message')}")
                                         ^^^^^^^^^^^^^^^^^^
SyntaxError: invalid syntax. Perhaps you forgot a comma?
>>> for entry in entries:
...     print(f"name: {entry.get('name')}")
...     print(f"email: {entry.get('email')}")
...     print(f"date: {entry.get('date')}")
...     print(f"message: {entry.get('message')}")
...
name: nathan
email: metens@pdx.edu
date: 2024-11-21 00:08:00+00:00
message: hello from entries
>>>
```

12. Test the API via Python Requests (POST)

```
url: https://us-central1-cloud-metens.cloudfunctions.net/entry
metens@cloudshell:~/cs430-src/06_gcp_restapi_cloudfunctions (cloud-metens)$ python3.12
Python 3.12.3 (main, Sep 11 2024, 14:17:37) [GCC 13.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> import requests
>>> import json
>>> mydict = {
...     'name': 'Nathan Metens',
...     'email': 'metens@pdx.edu',
...     'message': "Hello Cloud Functions from Python Requests!"}
>>> resp = requests.post('https://us-central1-cloud-metens.cloudfunctions.net/entry', json=mydict)

>>> print(resp.status_code)
200
>>> print(resp.headers)
{'content-type': 'application/json', 'access-control-allow-origin': '*', 'X-Cloud-Trace-Context': '4617f7da419af31f23d4d3c7373a459f;o=1', 'Date': 'Thu, 21 Nov 2024 07:30:37 GMT', 'Server': 'Google Frontend', 'Content-Length': '273'}
>>> print(resp.text)
[{"name": "Nathan Metens", "email": "metens@pdx.edu", "date": "2024-11-21 07:30:36.529813+00:00", "message": "Hello Cloud Functions from Python Requests!"}, {"name": "nathan", "email": "metens@pdx.edu", "date": "2024-11-21 00:08:00+00:00", "message": "hello from entries"}]
>>> █
```

15. Version #1: Local File System



8000-cs-292029700782-default.cs-us-west1-ijit.cloudshell.dev/?authuser=0&redirectedPreviously=true

Guestbook

Name:

Email:

Message:

Entries

Nathan Metens <metens@pdx.edu>
signed on 2024-11-21 21:42:08.916016+00:00
Hello API Gateway from local SPA!

16. Version #2: Google Cloud Storage Bucket

storage.googleapis.com/gbapi-metens/index.html



Nathan Metens <metens@pdx.edu>
signed on 2024-11-21 23:02:09.939967+00:00
Hello API Gateway from SPA in GCS!

8.3g: OAuth2 Guestbook

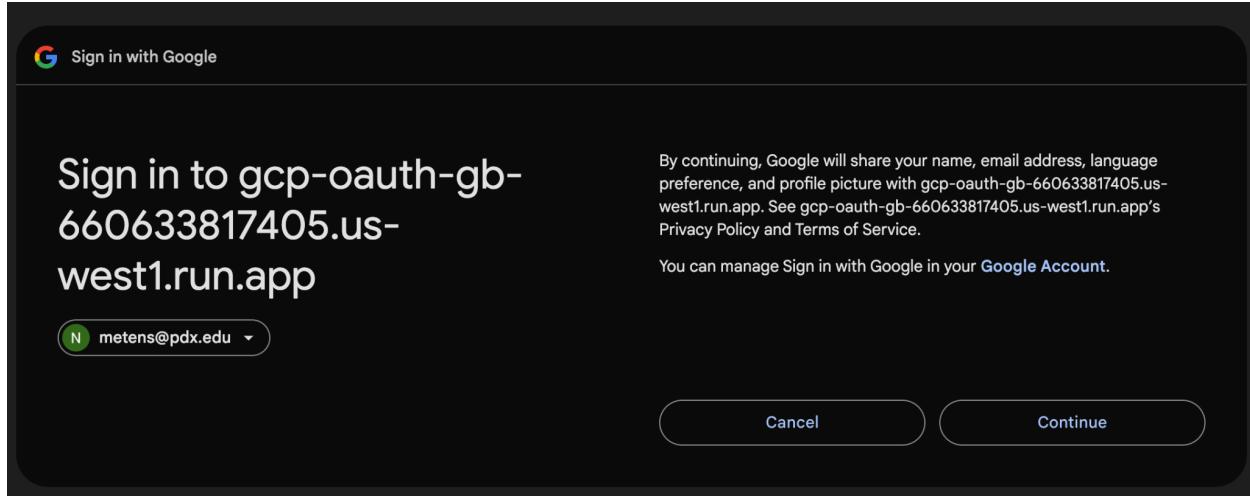
14. Visit the Application

Name	X	Headers	Preview	Response	Initiator	Timing	Cookies
sign							
auth?response_type=code&cli...							
identifier?opparams=%253F&...							
m=_b,_tp							
data:image/svg+xml;...							
4UaRrENHsxJIGDuGo1OIJfC6...							
m=byfTOb,lsjVmc,LEikZe							
m=n73qwf,SCuOPb,IJT63,vfu...							
m=ltDFwf,SD8Jgb,rnumx,E87...							
▼ Response Headers							

Name	X	Headers	Payload	Preview	Response	Initiator	Timing	Cookies
sign								
auth?response_type=code&cli...								
identifier?opparams=%253F&...								
m=_b,_tp								
data:image/svg+xml;...								
4UaRrENHsxJIGDuGo1OIJfC6...								
m=byfTOb,lsjVmc,LEikZe								
m=n73qwf,SCuOPb,IJT63,vfu...								
m=ltDFwf,SD8Jgb,rnumx,E87...								
m=p3hmRc,LvGhrf,RqjULd								
m=ZwDk9d,RMhBfe								
m=P6sQOc								
m=w9hDv,ZDZcre,A7fCU								
m=sOXFj,q0xTif,ZZ4WUE								
m=iAskyc,ziXSP								
▼ Response Headers								

This second request shown here is a result of line 8 in the callback.py file:

```
google = OAuth2Session(client_id, redirect_uri = redirect_callback,  
state=session['oauth_state'])
```



A screenshot of a browser developer tools Network tab. The URL in the address bar is "gcp-oauth-gb-660633817405.us-west1.run.app/sign". The Network tab shows a list of requests. One request is highlighted, showing the following details:

- Name: idas=S-2043589802:173225...
- Request URL: https://gcp-oauth-gb-660633817405.us-west1.run.app/callback?state=0VGidKQnZD3tS5tfmiyknvwGJxcvfc&code=4%2F0AeanS0bZQE99A3kxX83-RWFVd2sJh3zBcBbpuZ743AftbCi9CwdyqDlf6qYJyn8GIGZ1qw&scope=email+profile+openid+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.profile+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email&authuser=0&hd=pdx.edu&prompt=consent
- Request Method: GET
- Status Code: 302 Found
- Remote Address: [2001:4860:4802:34::35]:443
- Referrer Policy: origin

The callback sent the user to:

<https://gcp-oauth-gb-660633817405.us-west1.run.app/callback?state=0VGidKQnZD3tS5tfmiyknvwGJxcvfc&code=4%2F0AeanS0bZQE99A3kxX83-RWFVd2sJh3zBcBbpuZ743AftbCi9CwdyqDlf6qYJyn8GIGZ1qw&scope=email+profile+openid+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.profile+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email&authuser=0&hd=pdx.edu&prompt=consent>

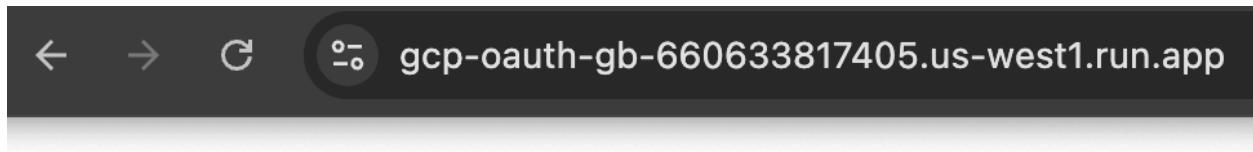
Which landed on the current page: <https://gcp-oauth-gb-660633817405.us-west1.run.app/sign> to add an entry in the guestbook.

A screenshot of a browser developer tools Network tab. The URL in the address bar is "gcp-oauth-gb-660633817405.us-west1.run.app/sign". The Network tab shows a list of requests. One request is highlighted, showing the following details:

- Name: ACg8ocLq7NwstCDUdXfhOh8WkuQzqQ2bXLwlHrcx-vCsAuMV-qH-w=s96-c
- Request URL: https://lh3.googleusercontent.com/a/ACg8ocLq7NwstCDUdXfhOh8WkuQzqQ2bXLwlHrcx-vCsAuMV-qH-w=s96-c
- Request Method: GET
- Status Code: 200 OK (from disk cache)
- Remote Address: [2001:fb0:400a:800::2001]:443
- Referrer Policy: no-referrer

The URL for the image:

<https://lh3.googleusercontent.com/a/ACg8ocLqG7NwstCDUdXfhOh8WKuQZqQ2bXLwlHrcx-vCsAuMV-qH-w=s96-c>



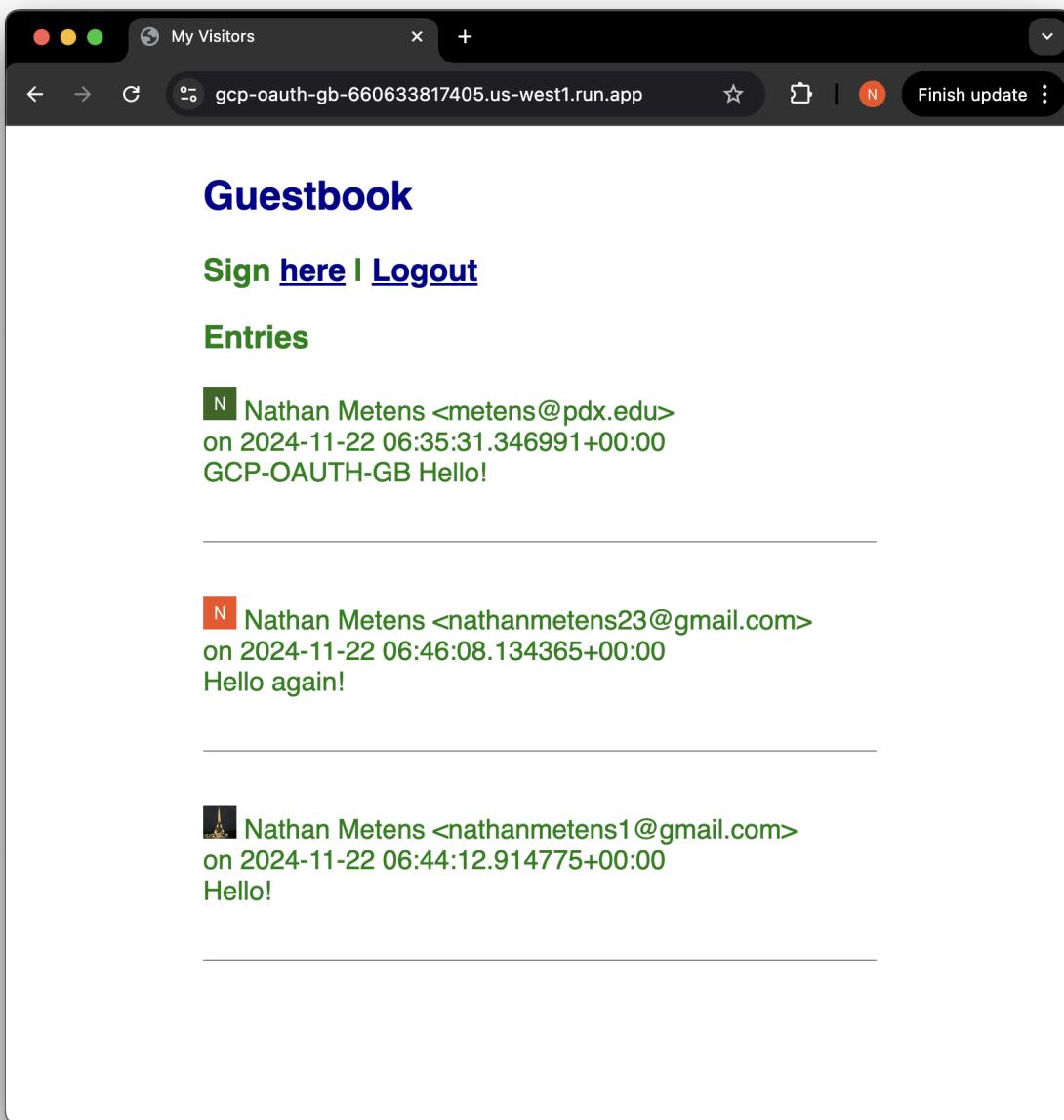
Guestbook

[Sign here](#) | [Logout](#)

Entries

N Nathan Metens <metens@pdx.edu>
on 2024-11-22 06:35:31.346991+00:00
GCP-OAUTH-GB Hello!

15. Secrets Manager Deployment



The screenshot shows a web browser window with the title "My Visitors". The address bar displays the URL "gcp-oauth-gb-660633817405.us-west1.run.app". On the right side of the browser, there is a "Finish update" button with a progress bar.

The main content of the page is titled "Guestbook". It features a "Sign [here](#) | [Logout](#)" link. Below this, the word "Entries" is displayed. The page lists three entries:

- N** Nathan Metens <metens@pdx.edu>
on 2024-11-22 06:35:31.346991+00:00
GCP-OAUTH-GB Hello!
- N** Nathan Metens <nathanmetens23@gmail.com>
on 2024-11-22 06:46:08.134365+00:00
Hello again!
- N** Nathan Metens <nathanmetens1@gmail.com>
on 2024-11-22 06:44:12.914775+00:00
Hello!

16 Removing Access

Google Account

← How Google helps you sign in to Guestbook

Sign in with Google

You use Sign in with Google to sign in to your Guestbook account. Google uses your name, email address, and profile picture to securely sign you in. [Learn more](#) ?

Access given on: 57 minutes ago

Access given to: gcp-oauth-gb-660633817405.us-west1.run.app ?

If you stop using Sign in with Google
If Guestbook uses automatic sign-in, Google will no longer automatically sign you in to Guestbook

[Stop using Sign in with Google](#)

Guestbook uses Google Account sign-in prompts to offer a faster way to sign in
To make changes, go to [Settings](#) ↗

Metens November 4, 2024 at 6:39 PM Metens

8.4g: Firebase

4. Authentication setup

User account management

- User account linking
- User actions
- Blocking functions
- User activity logging
- Sign-up quota
- Password policy

Domains

Authorized domains

For security, to use Phone, Google or third-party authentication, domains need to be authorized for OAuth redirects. [Learn more](#) ↗

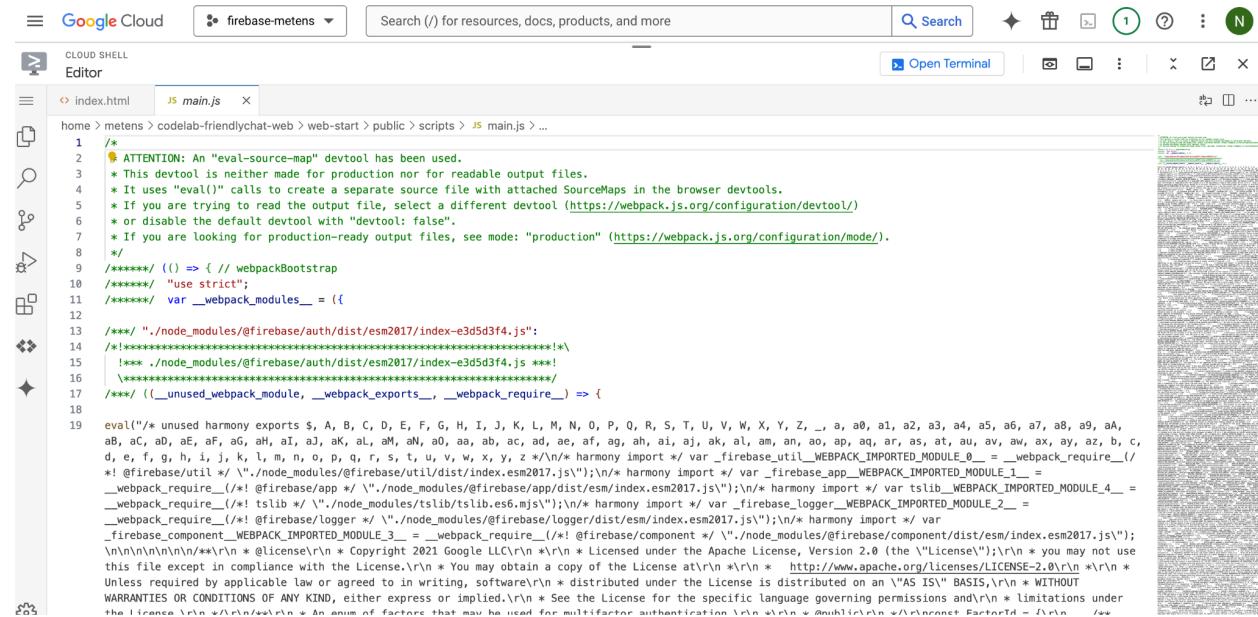
Authorized domain	Type
localhost	Default
fir-metens-442700.firebaseio.com	Default
fir-metens-442700.web.app	Default
cloudshell.dev	Custom

Add domain

Authorized domains by default:
localhost, fir-metens.firebaseio.com, fir-metens.web.app

8. Bundling with Webpack

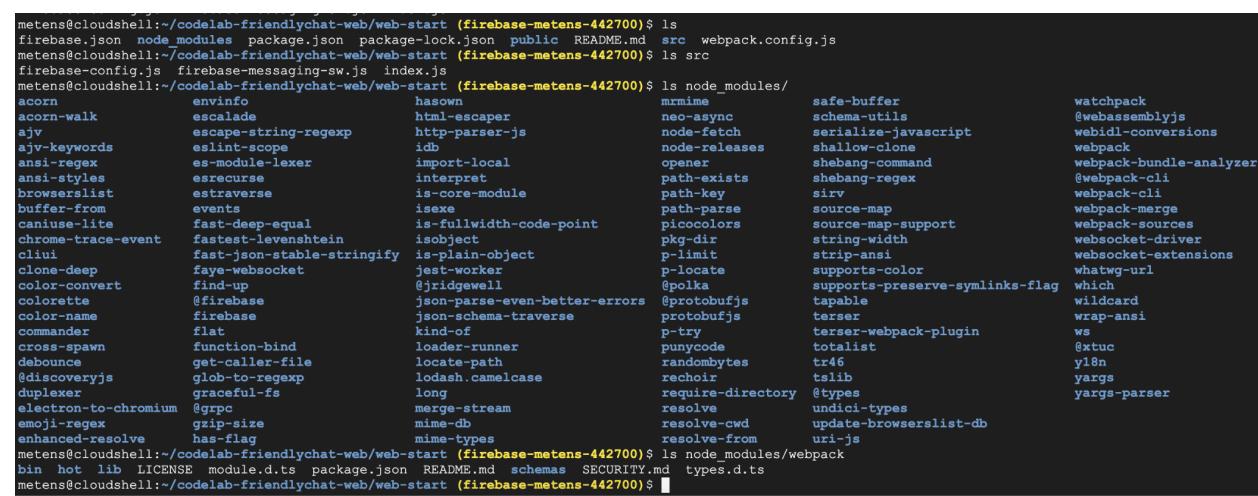
Webpack created this file:



```

/*
 * ATTENTION: An "eval-source-map" devtool has been used.
 * This devtool is neither made for production nor for readable output files.
 * It uses "eval()" calls to create a separate source file with attached SourceMaps in the browser devtools.
 * If you are trying to read the output file, select a different devtool (https://webpack.js.org/configuration/devtool/)
 * or disable the default devtool with "devtool: false".
 * If you are looking for production-ready output files, see mode: "production" (https://webpack.js.org/configuration/mode/).
 */
/******/ ((()) => { // webpackBootstrap
/******/   "use strict";
/******/   var _webpack_modules_ = ((());
/******/
/******/   /**/ ".node_modules/@firebase/auth/dist/esm2017/index-e3d5d3f4.js":
/******/   /*!*****!*\
  !*** ./node_modules/@firebase/auth/dist/esm2017/index-e3d5d3f4.js ***!
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```

metens@cloudshell:~/codeLab-friendlychat-web/web-start (firebase-metens-442700)$ ls
firebase.json  node_modules  package.json  package-lock.json  public  README.md  src  webpack.config.js
metens@cloudshell:~/codeLab-friendlychat-web/web-start (firebase-metens-442700)$ ls src
firebase-config.js  firebase-messaging-sw.js  index.js
metens@cloudshell:~/codeLab-friendlychat-web/web-start (firebase-metens-442700)$ ls node_modules/
acorn          envinfo          hasown          mrmime          safe-buffer          watchpack
acorn-walk     escalate         html-escaper    neo-async        schema-utils        @webassemblyjs
ajv           escape-string-regexp http-parser-js  node-fetch        serialize-javascript  webidl-conversions
ajv-keywords   eslint-scope      idb             node-releases    shallow-clone        webpack
ansi-regex     es-module-lexer import-local    openid            opener           shebang-command
ansi-styles    esrecurse        interpret       path-exists     shebang-regex        webpack-bundle-analyzer
browserslist   estraverse       is-core-module  path-key        sirv             @webpack-cli
buffer-from   events          isext          path-parse       source-map        webpack-merge
caniuse-lite  fast-deep-equal  is-fullwidth-code-point picocolors      source-map-support
chrome-trace-event fastest-levenstein  isplain-object  pkg-dir          string-width
cliui          fast-json-stable-stringify  jest-worker    p-limit         strip-ansi        webpack-sources
clone-deep     faye-websocket   isobject        p-locate        supports-color
color-convert   find-up          lodash.camelcase  @polka          supports-preserve-symlinks-flag
colorrette    @firebase        json-parse-even-better-errors @protobufjs  tapable          which
color-name     firebase        json-schema-traverse  protobufjs    terser            wildcard
commander      flat            kind-of        p-try           terser-webpack-plugin
cross-spawn    function-bind   loader-runner  punycode        totalist        ws
debounce       get-caller-file  locate-path    randombytes    tr46             @xtuc
@discoveryjs   glob-to-regexp  lodash.camelcase  rechoir        tslib           y18n
duplexer      graceful-fs      long           require-directory @types        yarg
electron-to-chromium @grpc        merge-stream  resolve        undici-types
emoji-regex    gzip-size       mime-db        resolve-cwd    update-browserslist-db
enhanced-resolve has-flag       mime-types    resolve-from   uri-js
metens@cloudshell:~/codeLab-friendlychat-web/web-start (firebase-metens-442700)$ ls node_modules/webpack
bin  hot  lib  LICENSE  module.d.ts  package.json  README.md  schemas  SECURITY.md  types.d.ts
metens@cloudshell:~/codeLab-friendlychat-web/web-start (firebase-metens-442700)$

```

12. Add Authentication

The functions that deal with user authentication are: **signIn, initFirebaseAuth, isUserSignedIn**

The functions that deal with sending and receiving messages: **saveImageMessage, saveMessage, loadMessages**

13. Update UI

When the user is signed out:

```
// User is signed out!
// Hide user's profile and sign-out button.
userNameElement.setAttribute('hidden', 'true');
userPicElement.setAttribute('hidden', 'true');
signOutButtonElement.setAttribute('hidden', 'true');

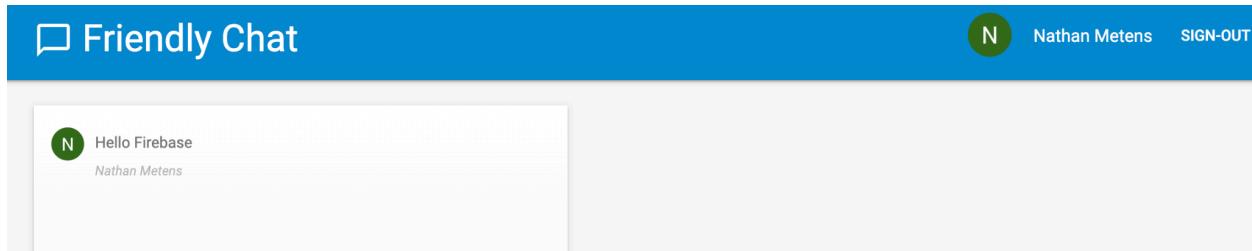
// Show sign-in button.
signInButtonElement.removeAttribute('hidden');

}
```

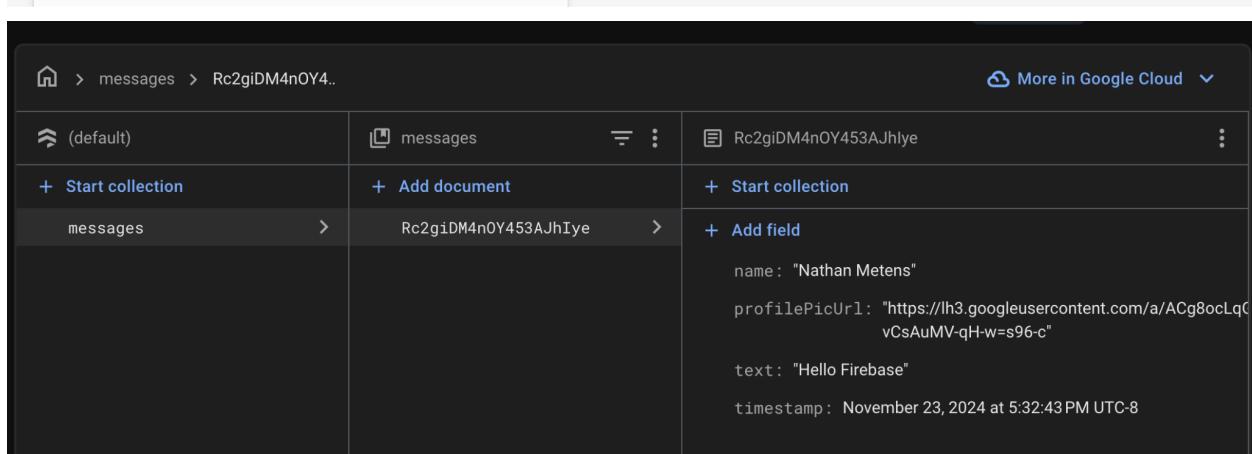
The names of the elements are **userNameElement**, **userPicElement**, and **signOutButtonElement**.

When the user is signed out the name of the element that is NOT hidden is the **signInButtonElement**.

16. Test Application with Text Messaging



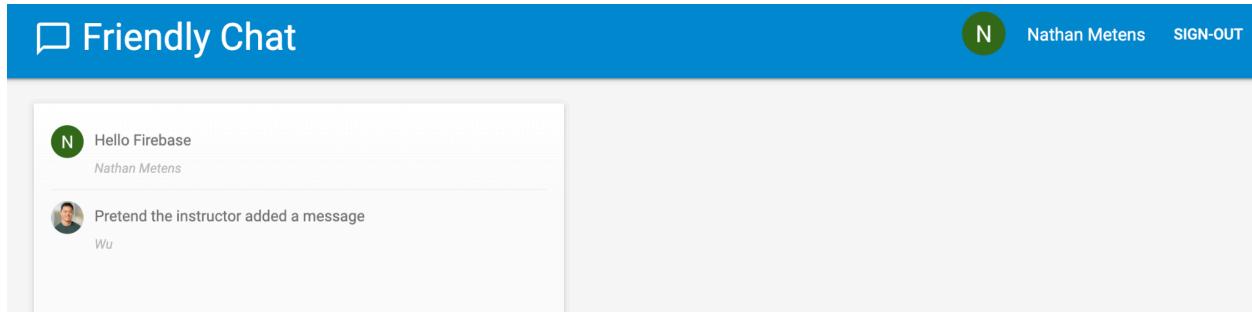
The screenshot shows the Friendly Chat application interface. At the top, there is a blue header bar with the title "Friendly Chat". On the right side of the header, there is a circular profile picture with the letter "N", the name "Nathan Metens", and a "SIGN-OUT" button. Below the header, the main content area displays a single message card. The message card has a green profile picture with the letter "N", the text "Hello Firebase", and the name "Nathan Metens".



The screenshot shows the Firebase Firestore console. The URL in the top navigation bar is "messages > Rc2giDM4n0Y453AJhIye". The document details are as follows:

(default)	messages	Rc2giDM4n0Y453AJhIye
+ Start collection	+ Add document	+ Start collection
messages >	Rc2giDM4n0Y453AJhIye >	+ Add field
		name: "Nathan Metens"
		profilePicUrl: "https://lh3.googleusercontent.com/a/ACg8ocLqCvCsAuMV-qH-w=s96-c"
		text: "Hello Firebase"
		timestamp: November 23, 2024 at 5:32:43 PM UTC-8

17. Manual Message Insertion



The screenshot shows a mobile-style messaging interface. At the top, there's a blue header bar with the text "Friendly Chat". On the right side of the header is a green circular profile icon with a white letter "N", followed by the name "Nathan Metens" and a "SIGN-OUT" button. The main area contains two messages. The first message is from "Nathan Metens" with the text "Hello Firebase". The second message is from "Wu" with the text "Pretend the instructor added a message". Both messages have small circular profile icons next to them.

18. Adding image messaging

The URL of the image that is first shown in the UI as the message is loading is found in the variable “LOADING_IMAGE_URL” on line 279 in index.js:

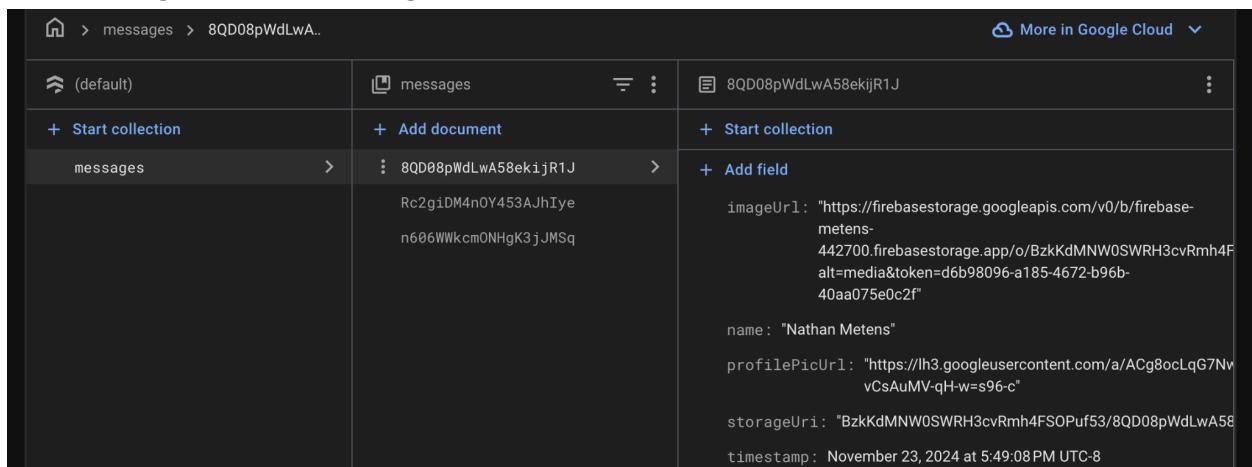
<https://www.google.com/images/spin-32.gif?a>

19. Test application with image messaging

The fields in a message **name**, **profilePicUrl**, **text**, **timestamp**

The fields in an image message: **imageUrl**, **name**, **profilePicUrl**, **storageUri**, **timestamp**

The difference between a image document and a text document is that **the image document has an imageUrl, and a storageUri, and no text**.



The screenshot shows the Firebase Realtime Database interface. It displays a single message document under the "messages" collection. The document ID is "8QD08pWdLwA58ekijR1J". The data for this document is as follows:

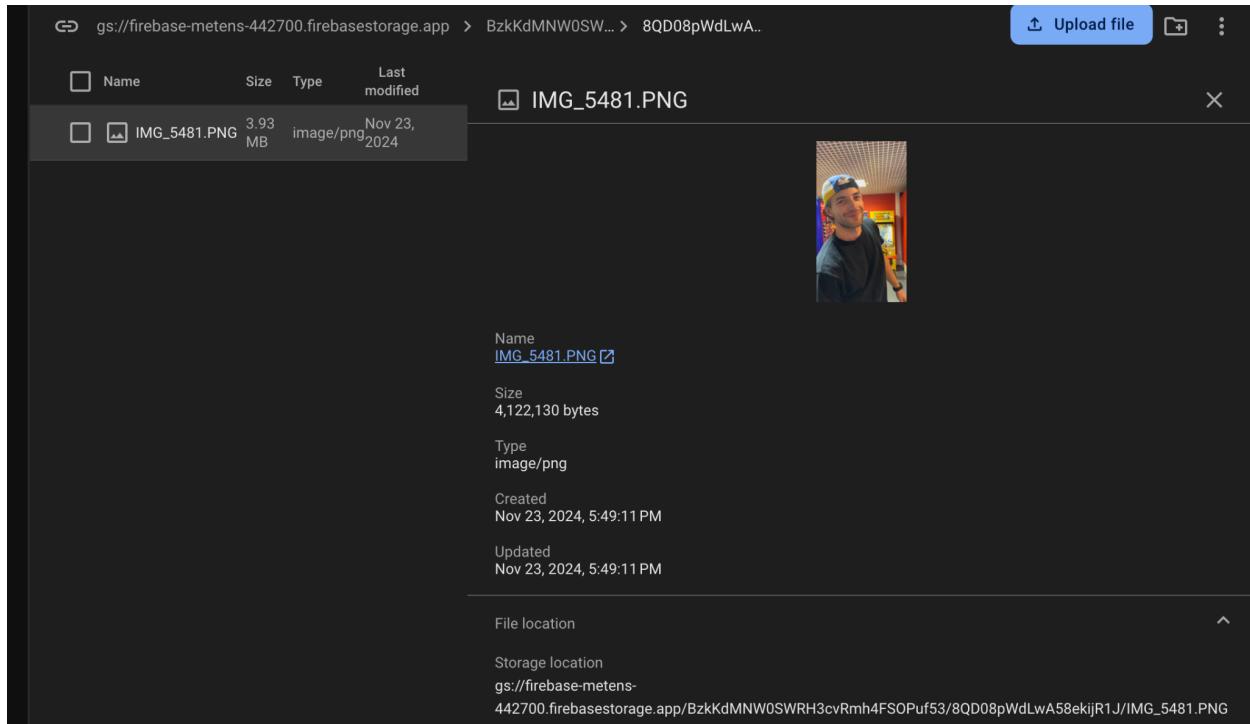
```
imageUrl: "https://firebasestorage.googleapis.com/v0/b.firebaseio-metens-442700.firebaseio.storage.app/o/BzkKdMNW0SWRH3cvRmh4FSOPuf53%2F8QD08pWdLwA58ekijR1J%2FIMG_5481.PNG?alt=media&token=d6b98096-a185-4672-b96b-40aa075e0c2f"
name: "Nathan Metens"
profilePicUrl: "https://lh3.googleusercontent.com/a/ACg8ocLqG7NvCsAuMV-qH-w=s96-c"
storageUri: "BzkKdMNW0SWRH3cvRmh4FSOPuf53/8QD08pWdLwA58
timestamp: November 23, 2024 at 5:49:08 PM UTC-8
```

The url that the image can be found at:

https://firebasestorage.googleapis.com/v0/b.firebaseio-metens-442700.firebaseio.storage.app/o/BzkKdMNW0SWRH3cvRmh4FSOPuf53%2F8QD08pWdLwA58ekijR1J%2FIMG_5481.PNG?alt=media&token=d6b98096-a185-4672-b96b-40aa075e0c2f

The storage location that the image can be found at:

BzkKdMNW0SWRH3cvRmh4FSOPuf53/8QD08pWdLwA58ekijR1J/IMG_5481.PNG



20. Deploy the application

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

The screenshot shows the deployed application at `fir-metens-442700.web.app`. The header includes a logo, the title "Friendly Chat", a user profile for "Nathan Metens", and a "SIGN-OUT" button. The main content area displays a chat interface. It shows a message from "Nathan Metens" and a message from "Wu". Below that, a large image of a man (Nathan Metens) is displayed. The next message is from "Vincent Liang", showing a small, heavily distorted image. At the bottom, there's an input field labeled "Message..." and a send button with a paper airplane icon.