

Github Repo: <https://github.com/IanTsai1/CS528-Homeworks/tree/main/HW3>

- Step 1, 2, 3
  - Create service account
  - Cloud Function
    - Two files (reference lecture 6 slides)
      - main.py (contains your code)
        - Used structure log framework from  
<https://docs.cloud.google.com/functions/1stgendocs/monitoring/logging?hl=en#functions-log-structured-python>
        - requirements.txt
    - Deploy service account
      - ‘gcloud functions deploy file-service \  
■ --gen2 \  
■ --runtime=python312 \  
■ --region=us-central1 \  
■ --source=. \  
■ --entry-point=file\_service \  
■ --memory=528Mi \  
■ --trigger-http \  
■ --allow-unauthenticated \  
■ --service-account  
[hw3-101@cs528-485121.iam.gserviceaccount.com](mailto:hw3-101@cs528-485121.iam.gserviceaccount.com)’
    - Function url =  
<https://us-central1-cs528-485121.cloudfunctions.net/file-service>
  - Step 4
    - ./http-client -d us-central1-cs528-485121.cloudfunctions.net -w  
'file-service?file=generated\_html' -i 20000 -s -b none -n 100

```

> i 2026-02-20 00:01:24.901 EST file_served
> i 2026-02-20 00:01:25.196 EST GET 200 20.01 KB 159 ms Unknown https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/10533.html
> i 2026-02-20 00:01:25.199 EST incoming_request
> i 2026-02-20 00:01:25.355 EST file_served
> i 2026-02-20 00:01:25.533 EST GET 200 97.43 KB 103 ms Unknown https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/16857.html
> i 2026-02-20 00:01:25.537 EST incoming_request
> i 2026-02-20 00:01:25.637 EST file_served
> i 2026-02-20 00:01:25.997 EST GET 200 81.95 KB 109 ms Unknown https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/6762.html
> i 2026-02-20 00:01:26.001 EST incoming_request
> i 2026-02-20 00:01:26.107 EST file_served
> i 2026-02-20 00:01:26.298 EST GET 200 1.14 KB 118 ms Unknown https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/9183.html
> i 2026-02-20 00:01:26.301 EST incoming_request
> i 2026-02-20 00:01:26.417 EST file_served
> i 2026-02-20 00:01:26.654 EST incoming_request
> i 2026-02-20 00:01:26.754 EST file_served
> i 2026-02-20 00:01:26.996 EST GET 200 168.06 KB 130 ms Unknown https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/3770.html
> i 2026-02-20 00:01:27.000 EST incoming_request
> i 2026-02-20 00:01:27.127 EST file_served
> i 2026-02-20 00:01:27.348 EST GET 200 55.33 KB 107 ms Unknown https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/1068.html
> i 2026-02-20 00:01:27.352 EST incoming_request
○ > i 2026-02-20 00:01:27.456 EST file_served

```

- Step 5 and 6

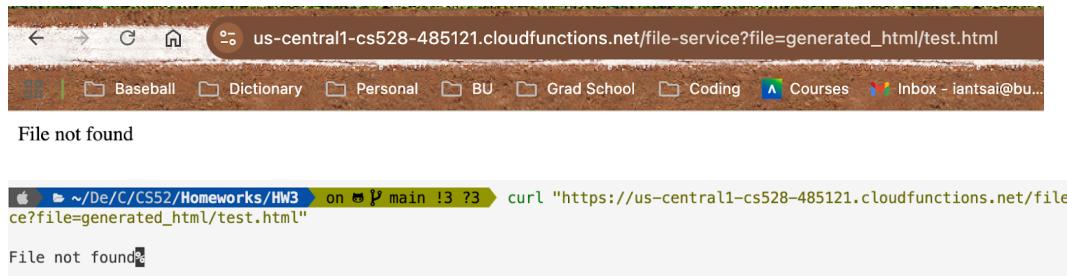
- 200:



- 404:

- curl

'`https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/test.html'`



2026-02-18 23:36:14.363 GET 404 143 B 44 ms Chrome 145.0... https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated\_html/test.html

Investigate log Copy Expand nested fields Hide log summary

```
{
  httpRequest: {10}
  insertId: "6996933e00065bbf03ded18f"
  labels: {4}
  logName: "projects/cs528-485121/logs/run.googleapis.com%2Frequests"
  receiveTimestamp: "2026-02-19T04:36:14.423121929Z"
  resource: {2}
  severity: "WARNING"
  spanId: "e018daf546c86356"
  timestamp: "2026-02-19T04:36:14.363215Z"
  trace: "projects/cs528-485121/traces/629fbff8dd0c165db0d696e21ee10081"
  traceSampled: true
}
```

- 501:

```
curl -i -X POST "https://us-central1-cs528-485121.cloudfunctions.net/file-service"
HTTP/2 501
content-type: text/html; charset=utf-8
x-cloud-trace-context: 9105556688df6739789decd160ca7455;o=1
date: Thu, 19 Feb 2026 04:39:55 GMT
server: Google Frontend
content-length: 15
alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000

Not implemented
```

2026-02-18 23:39:55.829 POST 501 144 B 3 ms curl 8.7.1 https://us-central1-cs528-485121.cloudfunctions.net/file-service

Investigate log Copy Expand nested fields Hide log summary

```
{
  httpRequest: {10}
  insertId: "6996941b000cd83afc8a0fde"
  labels: {4}
  logName: "projects/cs528-485121/logs/run.googleapis.com%2Frequests"
  receiveTimestamp: "2026-02-19T04:39:55.853125220Z"
  resource: {2}
  severity: "ERROR"
  spanId: "127ff4680a41bf087"
  timestamp: "2026-02-19T04:39:55.829645Z"
  trace: "projects/cs528-485121/traces/9105556688df6739789decd160ca7455"
  traceSampled: true
}
```

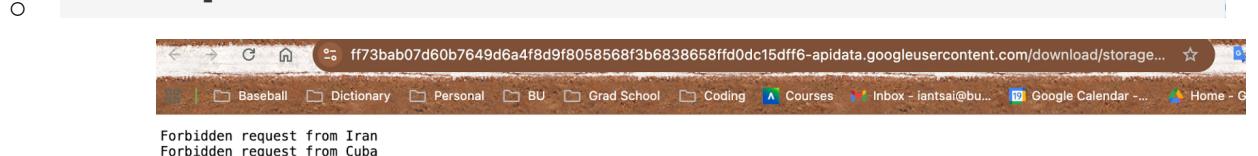
- Step 7 and 8

- Create pub sub

- gcloud pubsub topics create forbidden-topic
- gcloud pubsub subscriptions create forbidden-topic-sub --topic forbidden-topic

```
curl -H "X-country: Iran" \ "https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/0.html"
curl: (3) URL rejected: Malformed input to a URL function
Permission denied

curl -H "X-country: Cuba" "https://us-central1-cs528-485121.cloudfunctions.net/file-service?file=generated_html/0.html"
curl: (3) URL rejected: Malformed input to a URL function
Permission denied
```



- Updated txt file in gcloud bucket

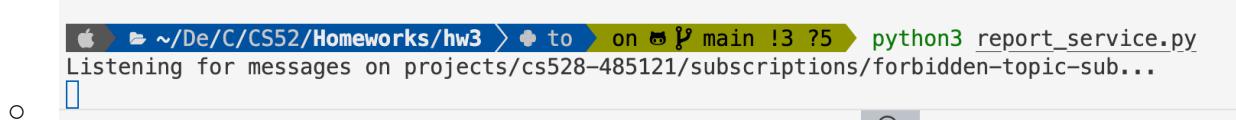


ff15eff7754fd4cb4715922f4f17a96492b7df5303b5907ad2547dc-ap

Baseball Dictionary Personal BU Grad School Coding Courses

```
Forbidden request from Iran
Forbidden request from Cuba
Forbidden request from Syria
test from Syria
test from Iran
test from Iran
{"country": "Iran", "message": "test"}
{"country": "Zimbabwe", "message": "forbidden access attempt"}
{"country": "Sudan", "message": "forbidden access attempt"}
{"country": "Cuba", "message": "forbidden access attempt"}
{"country": "Iraq", "message": "forbidden access attempt"}
{"country": "Iran", "message": "forbidden access attempt"}
 {"country": "Sudan", "message": "forbidden access attempt"}
 {"country": "Libya", "message": "forbidden access attempt"}
 {"country": "Iraq", "message": "forbidden access attempt"}
 {"country": "Iraq", "message": "forbidden access attempt"}
 {"country": "Myanmar", "message": "forbidden access attempt"}
 {"country": "Cuba", "message": "forbidden access attempt"}
 {"country": "Zimbabwe", "message": "forbidden access attempt"}
 {"country": "Iran", "message": "forbidden access attempt"}
 {"country": "Zimbabwe", "message": "forbidden access attempt"}
```

○



```
python3 report_service.py
Listening for messages on projects/cs528-485121/subscriptions/forbidden-topic-sub...
```

○

- Ran report\_service locally
- Report\_service is the subscriber/receiver of the other end of the pubsub; it receives the message then appends the message to the file in the bucket

- How I impersonated service accounts on a local laptop without using account keys? Explain which mechanism you picked, how it works and why you picked it
  - I used short-lived credentials by setting the service account's email to GOOGLE\_IMPERSONATE\_SERVICE\_ACCOUNT environment variable. Google issues a short-lived token. The script uses this token to perform actions (like writing to the bucket or pulling from Pub/Sub) as if it were the service acc.
    - Resource:  
<https://cloud.google.com/blog/topics/developers-practitioners/using-google-cloud-service-account-impersonation-your-terraform-code>

- If I stored my account keys in a json file which is then pushed publicly to github, the account will be stolen. By using this impersonation method, it leaves no sensitive credentials on the local hard drive.