

# HW3

## ▼ Github Link

<https://github.com/ArkashJ/DS561-HW>

## ▼ Code overview

- `main.py`

→ Functions

- `get_files_from_bucket` -
  - **Input** - Takes in the bucket name, folder name and file name
  - **Implementation:** In a try-except, checks the file in the bucket by checking it in the blob and returning the content of the blob
  - If failure to find the file, return a **404 error with a custom message**
- `make_storage_client` - make an anonymous storage client and return it
- `get_bucket_path_fname` - Given an input file, split the url into 3 parts to get the bucket name, directory and html file name
- `recieve_http_request` -
  - **Input** - flask request
  - **Implementation:**
    - Check request method type in a try except. If NOT GET type, return 501 error
    - Check if the requesting country is a banned country or not from the request `X-country` header. If it is, publish the result to a topic which will be consumed later, and return a 404
- `check_if_country_is_enemy` - function to simply check if the input country is a banned country or not

```
@functions_framework.http
def receive_http_request(
    request: flask.Request,
) -> Optional[flask.Response]:
    publisher = pubsub_v1.PublisherClient()
    topic_path = publisher.topic_path("cloudcomputingcourse-398918",
    "banned_request_countries")

    try:
        if request.method == "GET":
            requests_headers = dict(request.headers.items())
            print("request headers: ", requests_headers)
            if request.headers.get("X-country") is not None:
                country = request.headers.get("X-country")
                print(f"country: ----- {country}")
                if check_if_country_is_enemy(country):
                    err_msg = f"The country of {country} is an enemy country"
                    future = publisher.publish(topic_path,
                    err_msg.encode("utf-8"))
                    print(future.result())
                    return flask.Response(err_msg, status=400,
                    mimetype="text/plain")

                bucket_name, path_name, fname = get_bucket_path_fname(request)
                print(bucket_name, path_name, fname)
                return get_files_from_bucket(bucket_name, "mini_internet_test/",
                fname)
    except:
        err_msg = "Error, wrong HTTP Request Type"
        return flask.Response(err_msg, status=501, mimetype="text/plain")
```

## ▼ Testing

- First add authorization for the bash scripts

```
chmod u+x test2.sh
chmod u+x test.sh
# Follow instructions below
./test_local.sh

# Cloud
./test_cloud.sh
```

- 
- LOCAL:
  - You can run the following command IF you have started the server mentioned in the comments below. `-c` is an additional flag I added where if you choose an enemy country, it will return an error, but for a friendly country work as usual

```
python3 http-client.py -d 127.0.0.1 -p 8080 -v -n 1 \
-i 9999 \
-b hw2-arkjain-mini-internet \
-c Syria
```

```
hw3 on 🐍 main [!] via 🐍 v3.11.4 (env) on ☁ arkjain@bu.edu(us-east4)
> python3 http-client.py -d 127.0.0.1 -p 8080 -v -n 1 \
-i 9999 \
-b hw2-arkjain-mini-internet \
-c Syria
/Users/arkashjain/Desktop/Fall2023/CS561/hw3/http-client.py:61: DeprecationWarning: ssl.PROTOCOL_TLS is deprecated
  ssl_context = ssl.SSLContext(ssl.PROTOCOL_TLS)
400 BAD REQUEST
Server: Werkzeug/3.0.0 Python/3.11.4
Date: Sun, 08 Oct 2023 18:51:42 GMT
Content-Type: text/plain; charset=utf-8
Content-Length: 40
Connection: close
```

```
hw3 on 🐍 main [!] via 🐍 v3.11.4 (env) on ☁ arkjain@bu.edu(us-east4)
> python3 banned_requests.py
Received Message {
  data: b'The country of Syria is an enemy country'
  ordering_key: ''
  attributes: {}
}.
Received Message {
  data: b'The country of Syria is an enemy country'
  ordering_key: ''
  attributes: {}
}.
Received Message {
  data: b'The country of Syria is an enemy country'
  ordering_key: ''
  attributes: {}
}.
```

- `test_cloud.sh`
- I wrote a bash script for running tests locally and on the cloud. The script generates a random number between 0 and 9999 and between 10000 and 20000 to get the invalid files

- The screenshot shows the Google Cloud Pub/Sub console. The left sidebar shows the navigation menu with 'Pub/Sub' selected. The main content area shows the details for the 'banned\_request\_countries' subscription. The subscription is active. The 'MESSAGES' tab is selected, showing a list of messages. The first message is from 'The country of Syria is an enemy country'.

- ```
functions-framework --target=receive_http_request --debug
```

- [illegible]

```

HTTP/2 200
content-type: text/html; charset=utf-8
x-cloud-trace-context: b93f7868e502ad116e72c2bdebbec1df;o=1
date: Sun, 08 Oct 2023 18:32:00 GMT
server: Google Frontend
content-length: 79730
alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000

Testing GET request with invalid file number
HTTP/2 404
content-type: text/plain; charset=utf-8
x-cloud-trace-context: 556f5c071cd82ed94daccf00d38dc64c
date: Sun, 08 Oct 2023 18:32:01 GMT
server: Google Frontend
content-length: 20
alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000

Running PUT, POST, DELETE, HEAD, OPTIONS, TRACE, CONNECT requests on the same file
HTTP/2 501
content-type: text/plain; charset=utf-8
x-cloud-trace-context: b4a45b16b299a6d1f4705394a2e18942
date: Sun, 08 Oct 2023 18:32:01 GMT
server: Google Frontend
content-length: 30
alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000

HTTP/2 501
content-type: text/plain; charset=utf-8
x-cloud-trace-context: ddd6fef6a634c311348c05da51e457ab
date: Sun, 08 Oct 2023 18:32:01 GMT
server: Google Frontend
content-length: 30
alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000

HTTP/2 501
content-type: text/plain; charset=utf-8
x-cloud-trace-context: 04dae4824e0318e12ca85ffa322f66f6
date: Sun, 08 Oct 2023 18:32:01 GMT
server: Google Frontend
content-length: 30
alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000

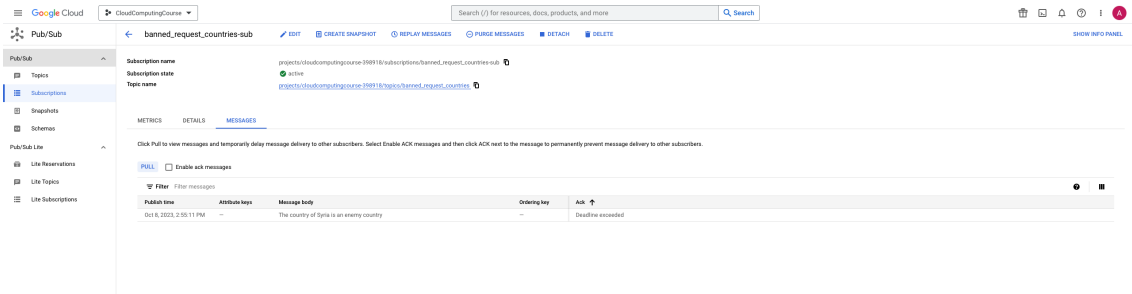
HTTP/2 501
content-type: text/plain; charset=utf-8
x-cloud-trace-context: 49e5623a42bf3e62b48811a4bee90a71
content-length: 30

```

## CLOUD LOGGING ERRORS:

|                               |         |     |       |       |            |                                                                                                              |
|-------------------------------|---------|-----|-------|-------|------------|--------------------------------------------------------------------------------------------------------------|
| > 2023-10-08 14:29:48.195 EDT | PUT     | 501 | 681 B | 10 ms | curl 8.1.1 | https://function-1-vpve2xlymq-uk.a.run.app/function-1/hw2-arkjain-mini-internet/mini_internet_test/172.html  |
| > 2023-10-08 14:29:48.310 EDT | DELETE  | 501 | 681 B | 9 ms  | curl 8.1.1 | https://function-1-vpve2xlymq-uk.a.run.app/function-1/hw2-arkjain-mini-internet/mini_internet_test/172.html  |
| > 2023-10-08 14:29:48.427 EDT | POST    | 501 | 682 B | 10 ms | curl 8.1.1 | https://function-1-vpve2xlymq-uk.a.run.app/function-1/hw2-arkjain-mini-internet/mini_internet_test/172.html  |
| > 2023-10-08 14:29:48.546 EDT | HEAD    | 501 | 651 B | 10 ms | curl 8.1.1 | https://function-1-vpve2xlymq-uk.a.run.app/function-1/hw2-arkjain-mini-internet/mini_internet_test/172.html  |
| > 2023-10-08 14:29:48.656 EDT | OPTIONS | 501 | 681 B | 9 ms  | curl 8.1.1 | https://function-1-vpve2xlymq-uk.a.run.app/function-1/hw2-arkjain-mini-internet/mini_internet_test/172.html  |
| > 2023-10-08 14:32:01.399 EDT | PUT     | 501 | 681 B | 9 ms  | curl 8.1.1 | https://function-1-vpve2xlymq-uk.a.run.app/function-1/hw2-arkjain-mini-internet/mini_internet_test/9971.html |
| > 2023-10-08 14:32:01.515 EDT | DELETE  | 501 | 681 B | 9 ms  | curl 8.1.1 | https://function-1-vpve2xlymq-uk.a.run.app/function-1/hw2-arkjain-mini-internet/mini_internet_test/9971.html |
| > 2023-10-08 14:32:01.624 EDT | POST    | 501 | 681 B | 10 ms | curl 8.1.1 | https://function-1-vpve2xlymq-uk.a.run.app/function-1/hw2-arkjain-mini-internet/mini_internet_test/9971.html |

## Cloud Subscriber Response



## ▼ Terminal commands ran with explanation

### Setting up local development environment

```
cd Desktop/Fall2023/CS561
mkdir hw3
python3 -m venv env
source env/bin/activate.fish
pip install functions-framework
touch requirements.txt
```

### Starting the sever locally

```
functions-framework --target=receive_http_request --debug
# Open another terminal and run the following command
```

```
hw3 on 12 main via v3.11.4 (env) on arkjain@bu.edu(us-east4)
> functions-framework --target=receive_http_request --debug
* Serving Flask app 'receive_http_request'
* 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 all addresses (0.0.0.0)
* Running on http://127.0.0.1:8080
* Running on http://192.168.1.72:8080
Press CTRL+C to quit
* Restarting with watchdog (fsevents)
* Debugger is active!
* Debugger PIN: 806-203-694
```

```
python3 http-client.py -d 127.0.0.1 -p 8080 -v -n 1 -i 9999
# Domain is 127.0.0.1
# Port is 8080
# -v gives verbose messages
# -i specifies max files
```

```
hw3 on 12 main via v3.11.4 (env) on arkjain@bu.edu(us-east4)
> python3 http-client.py -d 127.0.0.1 -p 8080 -v -n 1 -i 9999
/Users/arkashjain/Desktop/Fall2023/CS561/hw3/http-client.py:61: DeprecationWarning: ssl.PROTOCOL_TLS is deprecated
ssl_context = ssl.SSLContext(ssl.PROTOCOL_TLS)
400 BAD REQUEST
Server: Werkzeug/3.0.0 Python/3.11.4
Date: Sun, 08 Oct 2023 16:32:28 GMT
Content-Type: text/plain; charset=utf-8
Content-Length: 46
Connection: close

b'The country of North Korea is an enemy country'

hw3 on 12 main via v3.11.4 (env) on arkjain@bu.edu(us-east4)
>
```

```
request headers: {'Host': '127.0.0.1:8080', 'Accept-Encoding': 'identity', 'X-Country': 'North Korea', 'X-Client-IP': '215.253.66.19', 'X-Gender': 'Female', 'X-Age': '26-35', 'X-Income': '60k-100k', 'X-Time': '2023-10-08 19:00:00'}
country: ----- North Korea
9433517084359111
127.0.0.1 - - [08/Oct/2023 12:32:28] "GET bu-cds533-kthanasi-bucket1/webdir/3806.html HTTP/1.1" 400 -
```

## ▼ Console Testing Screenshots and code

```
var requestOptions = { method: 'POST', redirect: 'follow' };
fetch("http://127.0.0.1:8080/hw2-arkjain-mini-internet/webdir/2200.html",
  requestOptions)
  .then(response => response.text())
  .then(result => console.log(result))
  .catch(error => console.log('error', error));
```

## ▼ Pub Sub

### Enable Pub Sub

```
$ gcloud services enable pubsub.googleapis.com
$ gcloud pubsub topics create banned-request_countries
$ gcloud pubsub subscriptions create banned-request_countries \
  --topic banned_request_countries-sub
```

Filter Filter subscriptions

| Subscription ID ↑                            | Subscription name                                                               | Project                     |
|----------------------------------------------|---------------------------------------------------------------------------------|-----------------------------|
| <a href="#">banned_request_countries-sub</a> | projects/cloudcomputingcourse-398918/subscriptions/banned_request_countries-sub | cloudcomputingcourse-398918 |

← banned\_request\_countries EDIT + TRIGGER CLOUD FUNCTION IMPORT DELETE