

Project name: DS561-WYC-5304

Function name: hw3-ds561

Function URL: <https://hw3-ds561-p3irxs2pcq-ue.a.run.app/<filename>.html>

Github Repository Link: <https://github.com/wyc-wyll/ds561-hw-wyc.git>

Before Running both Apps, make sure:

1. Run the pip install shell command on the local machine to install google-cloud-pubsub

```
pip install --upgrade google-cloud-pubsub
```

2. Change the path into **HW3** subdirectory of the git repository

```
cd HW3
```

To request few hundreds of files:

1. Run the following command

```
python3 http-client.py -d hw3-ds561-p3irxs2pcq-ue.a.run.app -b  
/hw3-ds561 -w none -n 100 -i 11000 -s -v -f
```

where after `-n` is the number of requests and after `-i` is the max filename index

2. Result would be a series of http responses as either of the following:

```
Requesting /hw3-ds561/8478.html from  
hw3-ds561-p3irxs2pcq-ue.a.run.app 443  
200 OK  
content-type: text/html; charset=utf-8  
X-Cloud-Trace-Context: f1a9c8bc4c57582f5690fcc91dc03b67  
Date: Tue, 10 Oct 2023 05:19:39 GMT  
Server: Google Frontend  
Content-Length: 52994  
Alt-Svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000  
  
b'<!DOCTYPE html>\n<html>\n<body>\nLorem ipsum dolor sit amet,  
consectetur adipiscing elit, sed do eiusmod tempor incididunt ut  
labore et dolore magna aliqua. Ut enim ad\nnminim veniam, quis nostrud  
exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.  
Duis aute irure dolor in reprehenderit in voluptate velit  
esse\ncillum dolore eu fugiat nulla pariatur.  
.(html content)  
.(html content)  
.(html content)  
.(html content)  
.(html content)  
\n<a HREF="4221.html"> This is a link </a>\n<p>\nLorem ipsum dolor  
sit amet, consectetur adipiscing elit, sed do eiusmod tempor  
incidunt ut labore et dolore magna aliqua. Ut enim ad\nnminim  
veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex  
ea commodo consequat. Duis aute irure dolor in reprehenderit in  
voluptate velit esse\ncillum dolore eu fugiat nulla pariatur.  
Excepteur sint occaecat cupidatat non proident, sunt in culpa qui  
officia deserunt mollit anim id est laborum.\n<p>\n<a  
HREF="6937.html"> This is a link </a>\n<p>\n</body>\n</html>\n'
```

Above is a successful file retrieval since the file is found in the google cloud storage bucket

```

Requesting /hw3-ds561/10283.html from
hw3-ds561-p3irxs2pcq-ue.a.run.app 443
404 Not Found
content-type: text/html; charset=utf-8
X-Cloud-Trace-Context: 4f9e850110ee692911f9d2869d99695a;o=1
Date: Tue, 10 Oct 2023 05:19:41 GMT
Server: Google Frontend
Content-Length: 14
Alt-Svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000

```

Above is a failed file retrieval since the file is not found in the google cloud storage bucket

While the hundreds of requests are being made, cloud logging occurs as following:

> *	2023-10-10 01:18:52.010 EDT	hw3-ds561	GET 6149.html - - - - - 200 OK
> *	2023-10-10 01:18:53.912 EDT	hw3-ds561	GET 1703.html - - - - - 200 OK
> *	2023-10-10 01:18:55.629 EDT	hw3-ds561	GET 1336.html - - - - - 200 OK
> *	2023-10-10 01:18:57.574 EDT	hw3-ds561	GET 786.html - - - - - 200 OK
> *	2023-10-10 01:18:59.213 EDT	hw3-ds561	GET 1906.html - - - - - 200 OK
> *	2023-10-10 01:19:00.952 EDT	hw3-ds561	GET 3811.html - - - - - 200 OK
> *	2023-10-10 01:19:02.726 EDT	hw3-ds561	GET 5291.html - - - - - 200 OK
> *	2023-10-10 01:19:04.413 EDT	hw3-ds561	GET 5050.html - - - - - 200 OK
> *	2023-10-10 01:19:21.021 EDT	hw3-ds561	GET 489.html - - - - - 200 OK
> *	2023-10-10 01:19:22.743 EDT	hw3-ds561	GET 9890.html - - - - - 200 OK
> *	2023-10-10 01:19:24.426 EDT	hw3-ds561	GET 4249.html - - - - - 200 OK
> *	2023-10-10 01:19:26.304 EDT	hw3-ds561	GET 572.html - - - - - 200 OK
> *	2023-10-10 01:19:27.956 EDT	hw3-ds561	GET 2282.html - - - - - 200 OK
> *	2023-10-10 01:19:29.907 EDT	hw3-ds561	GET 7280.html - - - - - 200 OK
> *	2023-10-10 01:19:31.523 EDT	hw3-ds561	GET 6745.html - - - - - 200 OK
> *	2023-10-10 01:19:33.203 EDT	hw3-ds561	GET 6961.html - - - - - 200 OK
> *	2023-10-10 01:19:34.743 EDT	hw3-ds561	GET 1643.html - - - - - 200 OK
> *	2023-10-10 01:19:36.526 EDT	hw3-ds561	GET 2985.html - - - - - 200 OK
> *	2023-10-10 01:19:38.307 EDT	hw3-ds561	GET 921.html - - - - - 200 OK
> *	2023-10-10 01:19:39.909 EDT	hw3-ds561	GET 8478.html - - - - - 200 OK
> *	2023-10-10 01:19:41.608 EDT	hw3-ds561	GET 10283.html - - - - - 404 File Not Found
> *	2023-10-10 01:19:43.462 EDT	hw3-ds561	GET 3872.html - - - - - 200 OK

For any successful file retrieval, http result would be **200 OK**.

> *	2023-10-10 01:19:39.909 EDT	hw3-ds561	GET 8478.html - - - - - 200 OK
-----	-----------------------------	-----------	--------------------------------

For any failed file retrieval due to not found, http result would be **404 File Not Found**.

> *	2023-10-10 01:19:41.608 EDT	hw3-ds561	GET 10283.html - - - - - 404 File Not Found
-----	-----------------------------	-----------	---

Using Curl:

1. To test the function using curl, run the following:

```
curl https://hw3-ds561-p3irxs2pcq-ue.a.run.app/<filename>.html -X  
<METHOD> -v
```

2. Testing GET method

```
curl https://hw3-ds561-p3irxs2pcq-ue.a.run.app/3.html -X GET -v
```

Result:

```
Note: Unnecessary use of -X or --request, GET is already inferred.  
* Trying 216.239.38.53:443...  
* Connected to hw3-ds561-p3irxs2pcq-ue.a.run.app (216.239.38.53) port  
443 (#0)  
* ALPN: offers h2,http/1.1  
* (304) (OUT), TLS handshake, Client hello (1):  
* CAfile: /etc/ssl/cert.pem  
* CApath: none  
* (304) (IN), TLS handshake, Server hello (2):  
* (304) (IN), TLS handshake, Unknown (8):  
* (304) (IN), TLS handshake, Certificate (11):  
* (304) (IN), TLS handshake, CERT verify (15):  
* (304) (IN), TLS handshake, Finished (20):  
* (304) (OUT), TLS handshake, Finished (20):  
* SSL connection using TLSv1.3 / AEAD-CHACHA20-POLY1305-SHA256  
* ALPN: server accepted h2  
* Server certificate:  
* subject: CN=*.a.run.app  
* start date: Sep 18 08:19:02 2023 GMT  
* expire date: Dec 11 08:19:01 2023 GMT  
* subjectAltName: host "hw3-ds561-p3irxs2pcq-ue.a.run.app" matched  
cert's "*.a.run.app"  
* issuer: C=US; O=Google Trust Services LLC; CN=GTS CA 1C3  
* SSL certificate verify ok.  
* using HTTP/2  
* h2 [:method: GET]  
* h2 [:scheme: https]  
* h2 [:authority: hw3-ds561-p3irxs2pcq-ue.a.run.app]  
* h2 [:path: /3.html]
```

```
* h2 [user-agent: curl/8.1.2]
* h2 [accept: */*]
* Using Stream ID: 1 (easy handle 0x15c80a800)
> GET /3.html HTTP/2
> Host: hw3-ds561-p3irxs2pcq-ue.a.run.app
> User-Agent: curl/8.1.2
> Accept: */*
>
< HTTP/2 200
< content-type: text/html; charset=utf-8
< x-cloud-trace-context: 6b17c3a8ad13454257e997731134a5cb;o=1
< date: Tue, 10 Oct 2023 05:37:16 GMT
< server: Google Frontend
< content-length: 4501
< alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000
<
<!DOCTYPE html>
<html>
<body>
- - - - - Content - - - - -
</body>
</html>
```

A Cloud Logging entry would be made:

```
> * 2023-10-10 01:35:15.168 EDT hw3-ds561 GET 3.html - - - - - 200 OK
```

3. Testing POST method

```
curl https://hw3-ds561-p3irxs2pcq-ue.a.run.app/3.html -X POST -v
```

Result:

```
* Trying 216.239.38.53:443...
* Connected to hw3-ds561-p3irxs2pcq-ue.a.run.app (216.239.38.53) port
443 (#0)
* ALPN: offers h2,http/1.1
* (304) (OUT), TLS handshake, Client hello (1):
* CAfile: /etc/ssl/cert.pem
* CApath: none
```

```
* (304) (IN), TLS handshake, Server hello (2):
* (304) (IN), TLS handshake, Unknown (8):
* (304) (IN), TLS handshake, Certificate (11):
* (304) (IN), TLS handshake, CERT verify (15):
* (304) (IN), TLS handshake, Finished (20):
* (304) (OUT), TLS handshake, Finished (20):
* SSL connection using TLSv1.3 / AEAD-CHACHA20-POLY1305-SHA256
* ALPN: server accepted h2
* Server certificate:
*  subject: CN=*.a.run.app
*  start date: Sep 18 08:19:02 2023 GMT
*  expire date: Dec 11 08:19:01 2023 GMT
*  subjectAltName: host "hw3-ds561-p3irxs2pcq-ue.a.run.app" matched
cert's "*.a.run.app"
*  issuer: C=US; O=Google Trust Services LLC; CN=GTS CA 1C3
*  SSL certificate verify ok.
* using HTTP/2
* h2 [:method: POST]
* h2 [:scheme: https]
* h2 [:authority: hw3-ds561-p3irxs2pcq-ue.a.run.app]
* h2 [:path: /3.html]
* h2 [user-agent: curl/8.1.2]
* h2 [accept: /*/*]
* Using Stream ID: 1 (easy handle 0x13180a800)
> POST /3.html HTTP/2
> Host: hw3-ds561-p3irxs2pcq-ue.a.run.app
> User-Agent: curl/8.1.2
> Accept: /*/*
>
< HTTP/2 501
< content-type: text/html; charset=utf-8
< x-cloud-trace-context: 0b17a123cd461d56f78f98c9e4c77d5c;o=1
< date: Tue, 10 Oct 2023 05:39:55 GMT
< server: Google Frontend
< content-length: 15
< alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000
<
* Connection #0 to host hw3-ds561-p3irxs2pcq-ue.a.run.app left intact
Not Implemented%
```

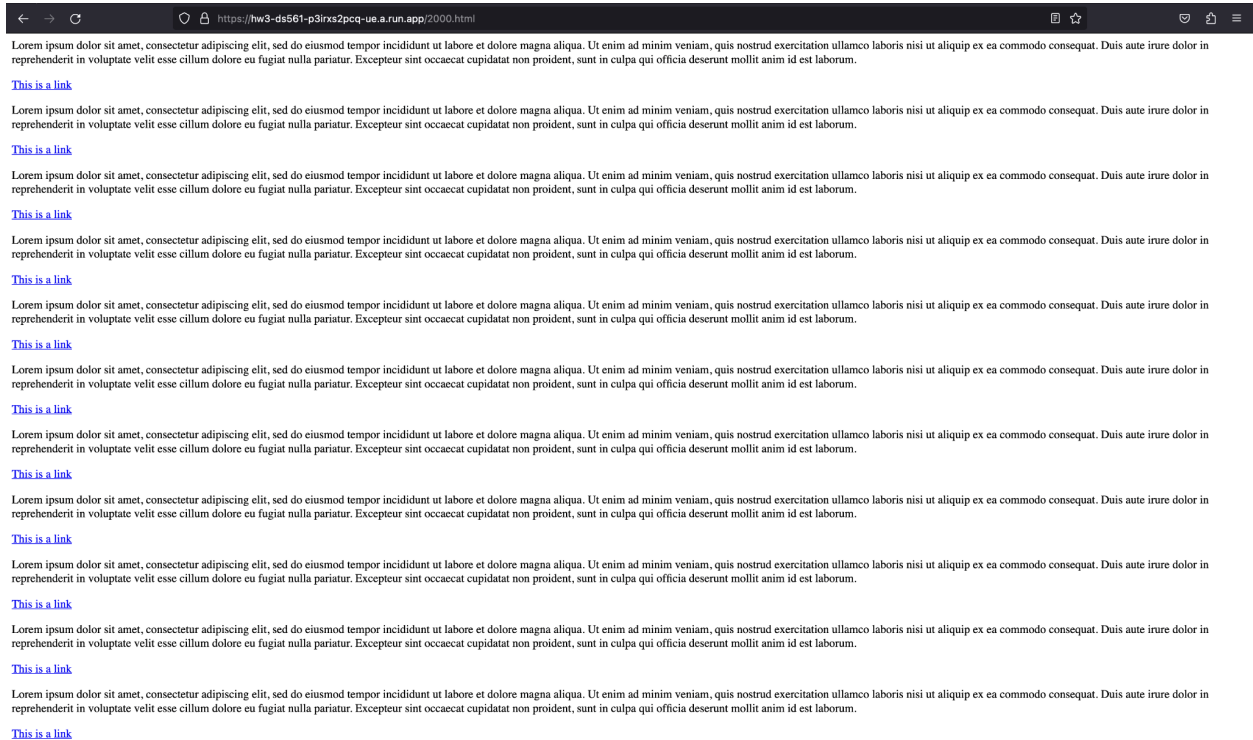
A Cloud Logging entry would be made:

>  2023-10-10 01:39:55.515 EDT | hw3-ds561 POST3.html requested - - - - - 501 Not Implemented

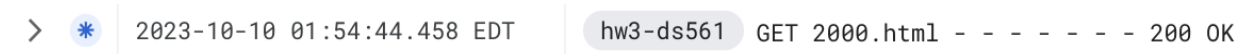
Testing with Browser:

1. **200 OK** RequestExample URL used: <https://hw3-ds561-p3irxs2pcq-ue.a.run.app/2000.html>

Result:



Cloud Logging:



2. 404 File Not Found Request

Example URL used: <https://hw3-ds561-p3irxs2pcq-ue.a.run.app/20000.html>

Result:



Cloud Logging:

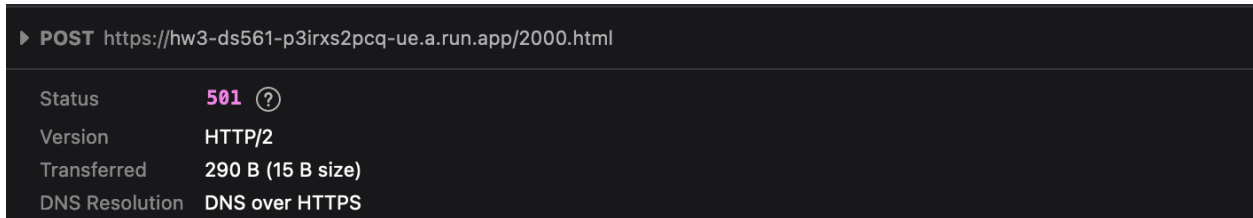
> * | 2023-10-10 01:58:16.408 EDT | hw3-ds561 GET 20000.html - - - - - 404 File Not Found

3. 501 Not Implemented Request

Example URL used: <https://hw3-ds561-p3irxs2pcq-ue.a.run.app/2000.html>

Method: FireFox Web Developer Tool Network

Result:



Cloud Logging:

> * | 2023-10-10 02:02:48.817 EDT | hw3-ds561 POST2000.html requested - - - - - 501 Not Implemented