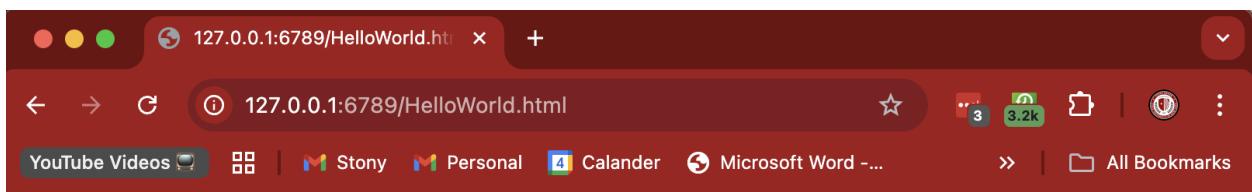


Part A:

1.

```
(.venv)(base) ~/PycharmProjects/CSE310ProgrammingAssignment1 git:[master]
python3 webserver.py
[DEBUG] Starting web server...
[DEBUG] Server running on http://127.0.0.1:6789/
[DEBUG] Waiting for client connections...■
```

2.



**Hello, World!**

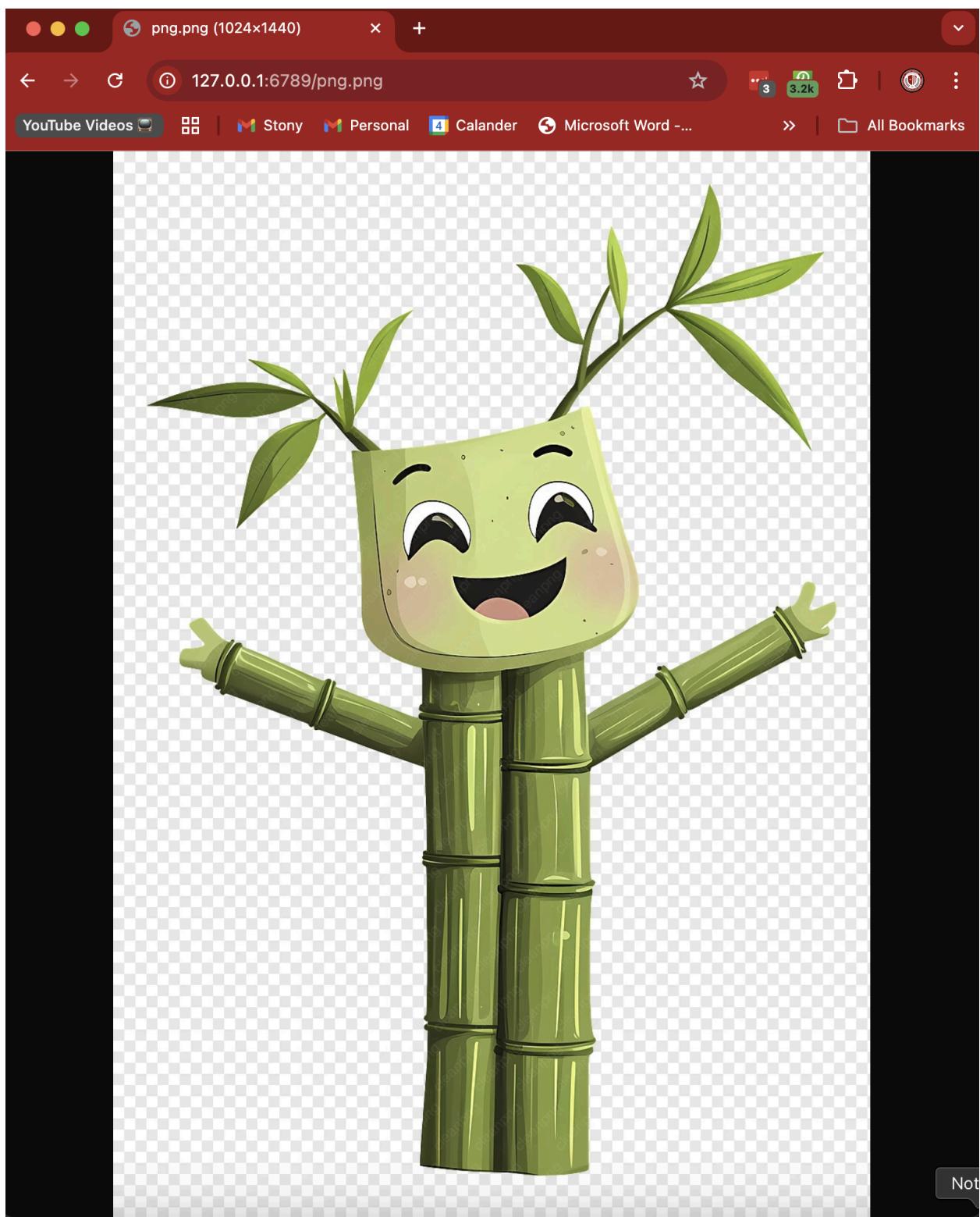
### 3.

```
(.venv)(base) ~/PycharmProjects/CSE310ProgrammingAssignment1 git:[master]
python3 webserver.py
[DEBUG] Starting web server...
[DEBUG] Server running on http://127.0.0.1:6789/
[DEBUG] Waiting for client connections...

[DEBUG] Connection established with ('127.0.0.1', 60517)

[DEBUG] Handling new client request...
[DEBUG] Raw request received (bytes): b'GET /HelloWorld.html HTTP/1.1\r\nHost: 127.0.0
.1:6789\r\nConnection: keep-alive\r\nsec-ch-ua: "Not(A:Brand";v="99", "Google Chrome";v="133",
"Chromium";v="133"\r\nsec-ch-ua-mobile: ?0\r\nsec-ch-ua-platform: "macOS"\r\nUpgrade-Insecure-Requests:
1\r\nUser-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/133.0.0.0 Safari/537.36\r\nAccept: text/html,application/xhtml+xml,application/xml;q=0.9,
image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7\r\nSec-Fetch-Site:
none\r\nSec-Fetch-Mode: navigate\r\nSec-Fetch-User: ?1\r\nSec-Fetch-Dest: document\r\nAccept-Encoding:
gzip, deflate, br, zstd\r\nAccept-Language: en-US,en;q=0.9\r\n\r\n'
[DEBUG] Decoded request text:
GET /HelloWorld.html HTTP/1.1
Host: 127.0.0.1:6789
Connection: keep-alive
sec-ch-ua: "Not(A:Brand";v="99", "Google Chrome";v="133", "Chromium";v="133"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "macOS"
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/133.0.0.0 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,
application/signed-exchange;v=b3;q=0.7
Sec-Fetch-Site: none
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
```

4.



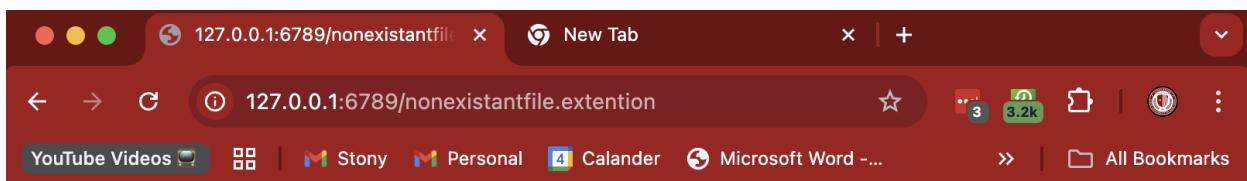
5.

```
[DEBUG] Handling new client request...
[DEBUG] Raw request received (bytes): b'GET /png.png HTTP/1.1\r\nHost: 127.0.0.1:6789\r\nConnection: keep-alive\r\nsec-ch-ua: "Not(A:Brand";v="99", "Google Chrome";v="133", "Chromium";v="133"\r\nsec-ch-ua-mobile: ?0\r\nsec-ch-ua-platform: "macOS"\r\nUpgrade-Insecure-Requests: 1\r\nUser-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/133.0.0.0 Safari/537.36\r\nAccept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7\r\nSec-Fetch-Site: none\r\nSec-Fetch-Mode: navigate\r\nSec-Fetch-User: ?1\r\nSec-Fetch-Dest: document\r\nAccept-Encoding: gzip, deflate, br, zstd\r\nAccept-Language: en-US,en;q=0.9\r\n\r\n'
[DEBUG] Decoded request text:
GET /png.png HTTP/1.1
Host: 127.0.0.1:6789
Connection: keep-alive
sec-ch-ua: "Not(A:Brand";v="99", "Google Chrome";v="133", "Chromium";v="133"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "macOS"
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/133.0.0.0 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
Sec-Fetch-Site: none
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9

[DEBUG] Parsed HTTP method: GET
[DEBUG] Requested file: /png.png
[DEBUG] File found: png.png
[DEBUG] Detected MIME type: image/png
[DEBUG] File size: 830106 bytes
[DEBUG] Sending 200 OK response with file content.
[DEBUG] Closing client connection.

[DEBUG] Connection established with ('127.0.0.1', 60866)
[DEBUG] Handling new client request...■
```

6.



**404 Not Found**

7.

```
[DEBUG] Connection established with ('127.0.0.1', 61041)

[DEBUG] Handling new client request...
[DEBUG] Raw request received (bytes): b'GET /nonexistantfile.extention HTTP/1.1\r\nHost: 127.0.0
.1:6789\r\nConnection: keep-alive\r\nsec-ch-ua: "Not(A:Brand";v="99", "Google Chrome";v="133",
"Chromium";v="133"\r\nsec-ch-ua-mobile: ?0\r\nsec-ch-ua-platform: "macOS"\r\nUpgrade-Insecure-Requests:
1\r\nUser-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/133.0.0.0 Safari/537.36\r\nAccept: text/html,application/xhtml+xml,application/xml;q=0.9,
image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7\r\nSec-Fetch-Site:
none\r\nSec-Fetch-Mode: navigate\r\nSec-Fetch-User: ?1\r\nSec-Fetch-Dest: document\r\nAccept-Encoding:
gzip, deflate, br, zstd\r\nAccept-Language: en-US,en;q=0.9\r\n\r\n'

[DEBUG] Decoded request text:
GET /nonexistantfile.extention HTTP/1.1
Host: 127.0.0.1:6789
Connection: keep-alive
sec-ch-ua: "Not(A:Brand";v="99", "Google Chrome";v="133", "Chromium";v="133"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "macOS"
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/133.0.0.0 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,
application/signed-exchange;v=b3;q=0.7
Sec-Fetch-Site: none
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9

[DEBUG] Parsed HTTP method: GET
[DEBUG] Requested file: /nonexistantfile.extention
[ERROR] File not found: nonexistantfile.extention. Sending 404 response.
[DEBUG] Closing client connection.

[DEBUG] Connection established with ('127.0.0.1', 61042)

[DEBUG] Handling new client request...
```

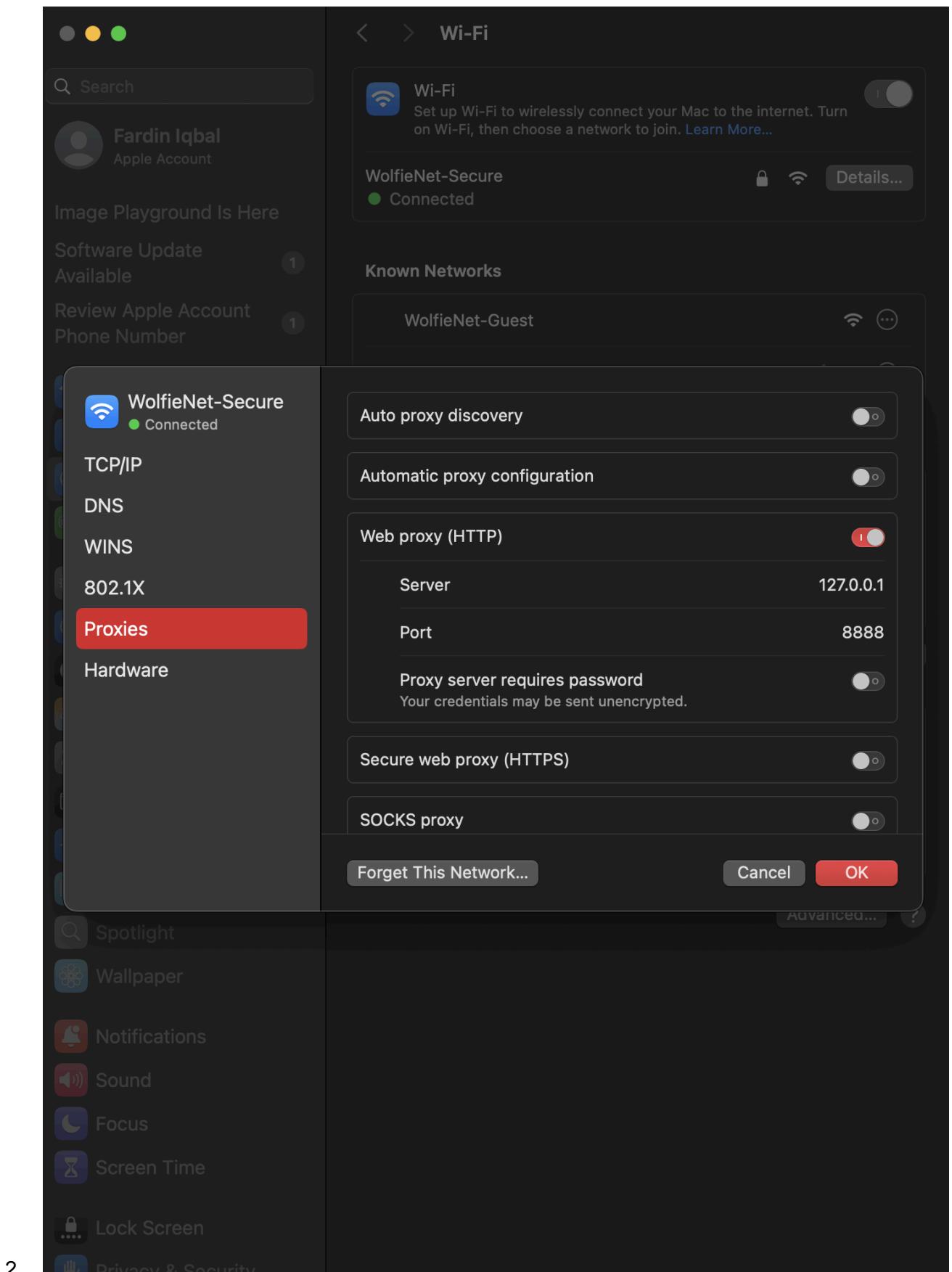
Part B:

```
(.venv)(base) ~/PycharmProjects/CSE310ProgrammingAssignment1 git:[master]
python3 proxyserver.py

[INFO] Proxy server listening on http://127.0.0.1:8888
[INFO] Connection established with ('127.0.0.1', 61342)
[DEBUG] Waiting to receive client request...
[DEBUG] Decoded request:
CONNECT lp-push-server-1827.lastpass.com:443 HTTP/1.1
Host: lp-push-server-1827.lastpass.com:443
Proxy-Connection: keep-alive
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/133.0.0.0 Safari/537.36

[DEBUG] Parsed request - Method: CONNECT, URL: lp-push-server-1827.lastpass.com:443
[ERROR] Only GET is supported. Received method: CONNECT
[DEBUG] Closed client connection.■
```

1.



2.

```
[DEBUG] Parsed request - Method: GET, URL: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html
[DEBUG] Extracted hostname: gaia.cs.umass.edu, Path: /wireshark-labs/HTTP-wireshark-file2.html
[DEBUG] Cache MISS for: gaia.cs.umass.edu_wireshark-labs_HTTP-wireshark-file2.html
[DEBUG] No cache found, forwarding request to gaia.cs.umass.edu...
[DEBUG] Request forwarded to remote server.
[DEBUG] Cached content at: cache/gaia.cs.umass.edu_wireshark-labs_HTTP-wireshark-file2.html
[DEBUG] Received 693 bytes from gaia.cs.umass.edu, sending to client...
[DEBUG] Closed client connection.
[INFO] Connection established with ('127.0.0.1', 62636)
[DEBUG] Waiting to receive client request...
[DEBUG] Decoded request:
GET http://gaia.cs.umass.edu/favicon.ico HTTP/1.1
Host: gaia.cs.umass.edu
Proxy-Connection: keep-alive
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko)
    Chrome/133.0.0.0 Safari/537.36
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html
Accept-Encoding: gzip, deflate
Accept-Language: en-US,en;q=0.9
```

3. [cache]

▼ cache

img gaia.cs.umass.edu\_favicon.ico

link gaia.cs.umass.edu\_wireshark-labs\_HTTP-wireshark-file2.html

4.

```
[DEBUG] Parsed request - Method: GET, URL: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html
[DEBUG] Extracted hostname: gaia.cs.umass.edu, Path: /wireshark-labs/HTTP-wireshark-file2.html
[DEBUG] Cache HIT for: gaia.cs.umass.edu_wireshark-labs_HTTP-wireshark-file2.html
[DEBUG] Serving cached content for: gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html
[DEBUG] Closed client connection.
[INFO] Connection established with ('127.0.0.1', 62889)
[DEBUG] Waiting to receive client request...
```

5.