

Building a Web Server

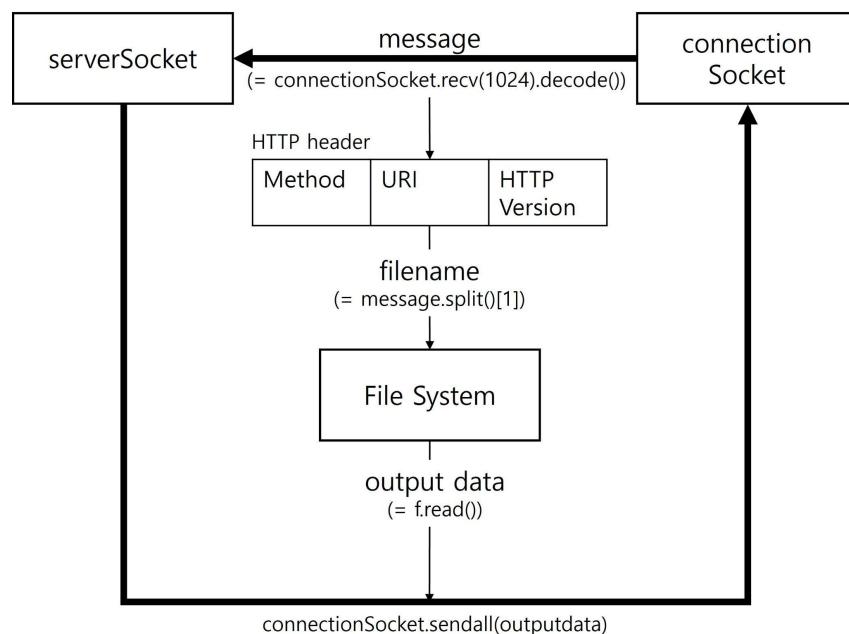
ECS 152A

Winter 2023

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1 Methodology

1.1 Web Server Program



1. A brief description of the basic logic of your program

1.2 Web Proxy Server Program

2 Results

2.1 Web Server Program

2.1.1. Task1: Colab Outputs

```
Step 4: Run the browser curl to fetch helloworld.html.

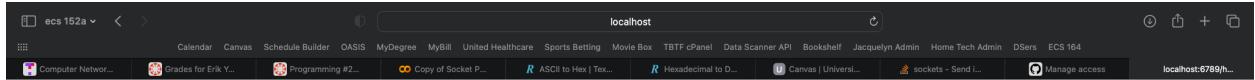
0s  !curl http://localhost:6789/helloworld.html
<html>
<body>
<h1>Network Programming</h1>
<p>Hello World.</p>
</body>
</html>

Step 4 part 2: fetch image.jpg

0s  !curl http://localhost:6789/image.jpg --output image.jpg
% Total    % Received % Xferd  Average Speed   Time   Time     Time  Current
          Dload  Upload   Total Spent  Left Speed
100 8087k    0 8087k      0      0  292M      0 ---:--:-- ---:--:-- ---:--:-- 292M
```

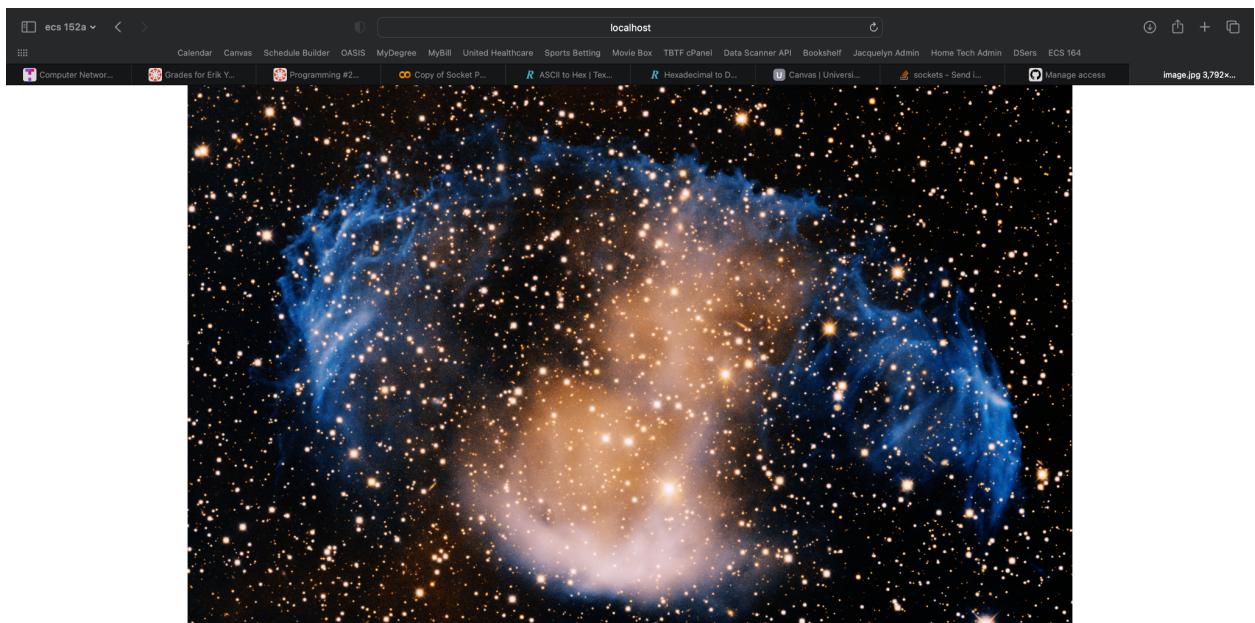
```
server.log  X  helloworld.html
...
1 Ready to serve...
2
3 connection at ('127.0.0.1', 54700) sent message:
4 GET /helloworld.html HTTP/1.1
5 Host: localhost:6789
6 User-Agent: curl/7.68.0
7 Accept: */*
8
9
10 Ready to serve...
11
12 connection at ('127.0.0.1', 44224) sent message:
13 GET /image.jpg HTTP/1.1
14 Host: localhost:6789
15 User-Agent: curl/7.68.0
16 Accept: */*
17
18
19 Ready to serve...
20
```

2.1.2. Task2: Local environment outputs



Network Programming

Hello World.



```
erikyoung85@Eriks-MacBook-Pro:~/programming2 % python3 WebServerPROB.py
Ready to serve...

connection at ('127.0.0.1', 49968) sent message:
GET /helloworld.html HTTP/1.1
Host: localhost:6789
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Upgrade-Insecure-Requests: 1
Cookie: csrfToken=3PRg0WCjXHLQkfV0Q08EQUbxqoxtQNQasiAY3lFQhKcIcgJRVgsQL5WfNlyT00H3
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/605.1.15 (KHTML, like Gecko) Version/16.3 Safari/605.1.15
Accept-Language: en-US,en;q=0.9
Accept-Encoding: gzip, deflate
Connection: keep-alive

Ready to serve...

connection at ('127.0.0.1', 49970) sent message:
GET /image.jpg HTTP/1.1
Host: localhost:6789
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Upgrade-Insecure-Requests: 1
Cookie: csrfToken=3PRg0WCjXHLQkfV0Q08EQUbxqoxtQNQasiAY3lFQhKcIcgJRVgsQL5WfNlyT00H3
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/605.1.15 (KHTML, like Gecko) Version/16.3 Safari/605.1.15
Accept-Language: en-US,en;q=0.9
Accept-Encoding: gzip, deflate
Connection: keep-alive

Ready to serve...
```

2.2 Web Proxy Server Program

2.2.1. Task3: Colab Proxy Server Outputs (First fetch)

Step 6: Run the browser but this time through the proxy server

```
!curl http://localhost:8888/localhost:6789/helloworld.html
<html>
<body>
<h1>Network Programming</h1>
<p>Hello World.</p>
</body>
</html>
```

Step 6 part 2: Fetch the image through the proxy server

```
!curl http://localhost:8888/localhost:6789/image.jpg --output image.jpg
% Total    % Received % Xferd  Average Speed   Time     Time     Time  Current
          Dload  Upload Total   Spent   Left Speed
100 8087k    0 8087k    0      0   607M      0 ---:---:---:--- 607M
```

proxy.log x

```
1 Ready to serve...
2
3 connection at ('127.0.0.1', 56086) sent message:
4 GET /localhost:6789/helloworld.html HTTP/1.1
5 Host: localhost:8888
6 User-Agent: curl/7.68.0
7 Accept: */*
8
9
10 forwarding to localhost:6789
11
12 Ready to serve...
13
14 connection at ('127.0.0.1', 34186) sent message:
15 GET /localhost:6789/image.jpg HTTP/1.1
16 Host: localhost:8888
17 User-Agent: curl/7.68.0
18 Accept: */*
19
20
21 forwarding to localhost:6789
22
23 Ready to serve...
24
```

2.2.2. Task3: Colab Proxy Server Outputs (Second fetch)

Step 6: Run the browser but this time through the proxy server

```
os [8] !curl http://localhost:8888/localhost:6789/helloworld.html
<html>
<body>
<h1>Network Programming</h1>
<p>Hello World.</p>
</body>
</html>
```

Step 6 part 2: Fetch the image through the proxy server

```
5s  !curl http://localhost:8888/localhost:6789/image.jpg --output image.jpg
% Total    % Received % Xferd  Average Speed   Time     Time     Time  Current
          Dload  Upload Total   Spent    Left Speed
100 8087k    0 8087k    0      0  1789k      0 ---:---:--- 0:00:04 ---:---:--- 1873k
```

proxy.log

```
proxy.log X ...
...
1 Ready to serve...
2
3 connection at ('127.0.0.1', 56086) sent message:
4 GET /localhost:6789/helloworld.html HTTP/1.1
5 Host: localhost:8888
6 User-Agent: curl/7.68.0
7 Accept: */*
8
9
10 forwarding to localhost:6789
11
12 Ready to serve...
13
14 connection at ('127.0.0.1', 34186) sent message:
15 GET /localhost:6789/image.jpg HTTP/1.1
16 Host: localhost:8888
17 User-Agent: curl/7.68.0
18 Accept: */*
19
20
21 forwarding to localhost:6789
22
23 Ready to serve...
24
```

2.2.3. Task4: Local Environment Proxy Server Outputs

```
erikyoung85@Eriks-MacBook-Pro programming2 % python3 WebServerPROXY.py
Ready to serve...

connection at ('10.0.0.3', 60885) sent message:
GET /10.0.0.2:6789/image.jpg HTTP/1.1
Host: 10.0.0.2:8888
Upgrade-Insecure-Requests: 1
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
User-Agent: Mozilla/5.0 (iPhone; CPU iPhone OS 16_3_1 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko) Version/16.3
Mobile/15E148 Safari/604.1
Accept-Language: en-US,en;q=0.9
Accept-Encoding: gzip, deflate
Connection: keep-alive

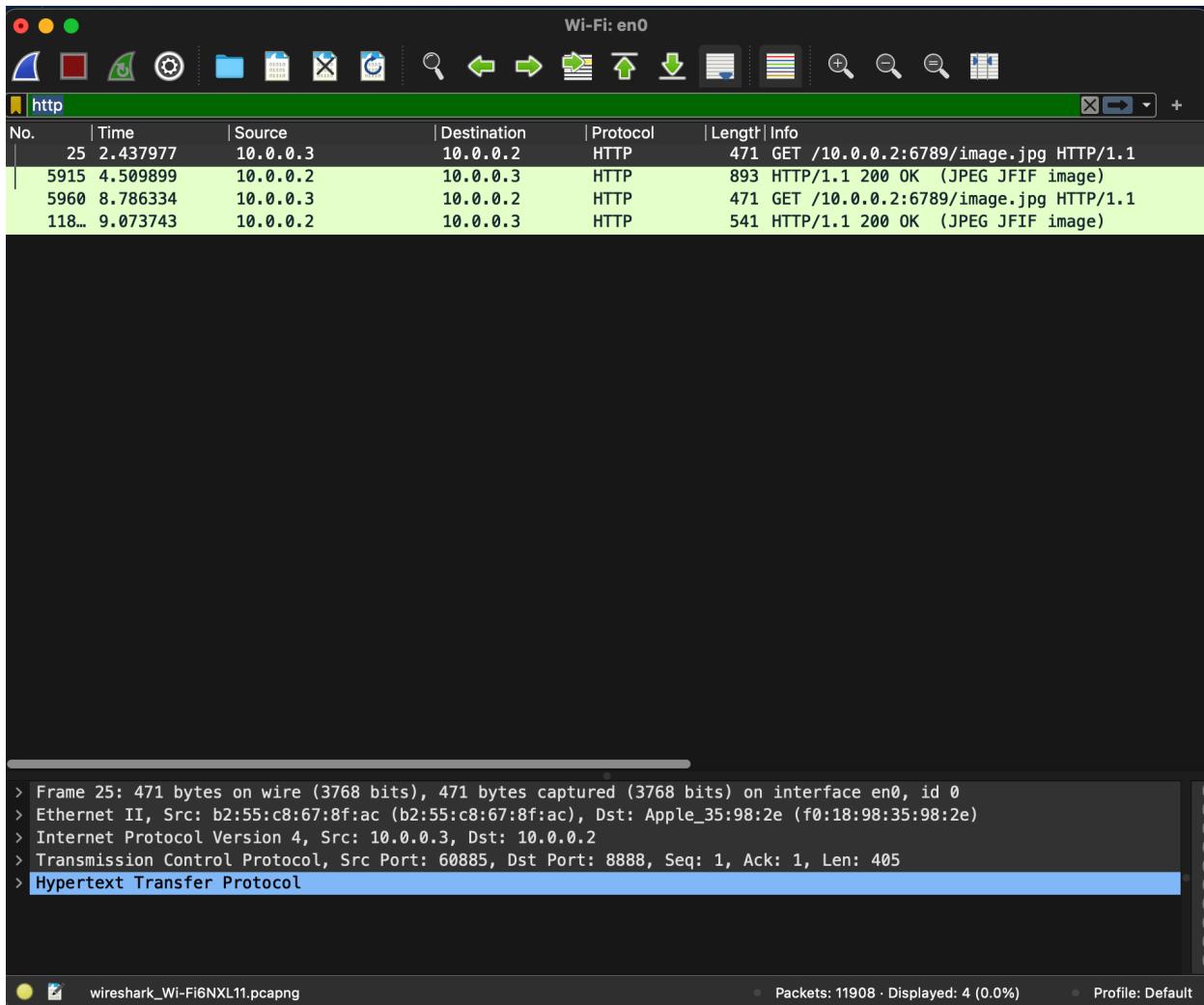
forwarding to 10.0.0.2:6789

Ready to serve...

connection at ('10.0.0.3', 60886) sent message:
GET /10.0.0.2:6789/image.jpg HTTP/1.1
Host: 10.0.0.2:8888
Upgrade-Insecure-Requests: 1
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
User-Agent: Mozilla/5.0 (iPhone; CPU iPhone OS 16_3_1 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko) Version/16.3
Mobile/15E148 Safari/604.1
Accept-Language: en-US,en;q=0.9
Accept-Encoding: gzip, deflate
Connection: keep-alive

getting response from cache
Ready to serve...
```

2.2.4. Task5: Wireshark Output



2. Sample runs and screenshots as instructed to demonstrate the correctness of your program

3 Discussion

1.1 Web Server Program

1.2 Web Proxy Server Program

3. Answers to questions raised in the assignment

4 Appendix

4. Appendix that contains full listing of your source code – preferably pretty-print from your development platform rather than cut-and-paste to your word document