Samir Cerrato

COMP332

Professor Manfredi

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<div align="center">Write-Up HW #3</div>

The web client and proxy are designed to provide a basic interaction between a client and a proxy server. The client sends a requested URL to the proxy server, and the proxy server retrieves the content from the web server, caches it, and forwards it to the client. Multi-threading is implemented in the proxy server to handle multiple client connections simultaneously.

Ideally, the program is designed to work with websites that use UTF-8 encoding and follow standard HTTP protocol. An example of this code working is requesting the content from htttp://example.com/ through the proxy. Others include, http://eu.httpbin.org, http://info.cern.ch/, and http://www-db.deis.unibo.it/. The response takes a few minutes to fully load.

Below is a screenshot of the code running successfully with a working test case:

However, the program may not work with websites that use encoding other than UTF-8, implement non-standard HTTP protocols, have dynamic content, or require authentication or authorization to log in. Some examples of such websites include https://www.google.com, https://www.facebook.com, or

https://www.amazon.com. Below is a screenshot of the program running into an error when trying to request http://info.cern.ch/hypertext/WWW/TheProject.html:

```
Last login: Thu Feb 22 01:33:30 on ttys008

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
[Samirs-MacBook-Air:~ samircerrato$ cd desktop
[Samirs-MacBook-Air:desktop samircerrato$ cd COMP332
[Samirs-MacBook-Air:COMP332 samircerrato$ cd hw3
[Samirs-MacBook-Air:hw3 samircerrato$ python3 web_proxy.py localhost 50008
['web_proxy.py', 'localhost', '50008'] 3
Proxy server is running...
Client with address has connected ('127.0.0.1', 56432)
Connected to web server
Forwarding data to client
Client with address has connected ('127.0.0.1', 56441)
Error communicating with web server: [Errno 8] nodename nor servname provided, or not known
[]
```

```
Etag: "3147526947+ident"
Expires: Thu, 29 Feb 2024 06:34:30 GMT
Last-Modified: Thu, 17 Oct 2019 07:18:26 GMT
Server: ECS (nyb/1D28)
Vary: Accept-Encoding
X-Cache: HIT
Content-Length: 1256

<!doctype html>
<html>
<head>
    <title>Example Domain</title>

    <meta charset="utf-8" />
    <meta http-equiv="Content-type" content="text/html; charset=utf-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1" />
    <style type="text/css">
    body {
        background-color: #f0f0f2;
        margin: 0;
        padding: 0;
        font-family: -apple-system, system-ui, BlinkMacSystemFont, "Segoe UI", "Open Sans", "Helvetica Neu
e", Helvetica, Arial, sans-serif;

    }
    div {
        width: 600px;
        margin: 5em auto;
        padding: 2em;
        background-color: #fdfdff;
        border-radius: 0.5em;
        box-shadow: 2px 3px 7px 2px rgba(0,0,0,0.02);
    }
    a:link, a:visited {
        color: #38488f;
        text-decoration: none;
    }
    @media (max-width: 700px) {
        div {
            margin: 0 auto;
            width: auto;
        }
    }
    </style>
</head>

<body>
<div>
    <h1>Example Domain</h1>
    <p>This domain is for use in illustrative examples in documents. You may use this
    domain in literature without prior coordination or asking for permission.</p>
    <p><a href="https://www.iana.org/domains/example">More information...</a></p>
</div>
</body>
</html>

[Samirs-MacBook-Air:hw3 samircerrato$ python3 web_client.py localhost 50008 http://info.cern.ch/hypertext/W
WW/TheProject.html
['web_client.py', 'localhost', '50008', 'http://info.cern.ch/hypertext/WWW/TheProject.html'] 4
Connected to socket
Response from web proxy:

Samirs-MacBook-Air:hw3 samircerrato$
```

We get the error saying: "error communicating with web server: [Errno 8] nodename nor servname provide, or not known". There could be a few reasons for this failure, with an invalid hostname or network connectivity issues to name a few.