

Web server:

1. Run singleThreaderServer.py or multiThreadedServer.py in one terminal
2. Run client.py in another terminal
3. Change up the request from client.py to test for different responses

Test cases:

HTTP/1.1 200 OK

Client request: GET /test.html HTTP/1.1\r\n

HTTP/1.1 200 OK

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8" />
    <title></title>
    <meta name="author" content="" />
    <meta name="description" content="" />
    <meta name="viewport" content="width=device-width, initial-scale=1" />
  </head>

  <body>
    <p>
      Congratulations! Your Web Server is Working!
    </p>
  </body>
</html>
```

HTTP/1.1 304 NOT MODIFIED

Client request: GET /test.html HTTP/1.1\r\n

Didn't modify anything and tried to request the same get command

HTTP/1.1 304 NOT MODIFIED

Not Modified

HTTP/1.1 200 OK

Client request: GET /test.html HTTP/1.1\r\n

Modified test.html

```
[filipomarcellino@Filipos-MacBook-Air mp % python3 client.py
```

```
HTTP/1.1 200 OK
```

```
<!DOCTYPE html>
```

```
<html>
```

```
  <head>
```

```
    <meta charset="utf-8" />
```

```
    <title></title>
```

```
    <meta name="author" content="" />
```

```
    <meta name="description" content="" />
```

```
    <meta name="viewport" content="width=device-width, initial-scale=1" />
```

```
  </head>
```

```
  <body>
```

```
    <p>
```

```
      Congratulations! Your Web Server is Working! And this file is modified
```

```
    </p>
```

```
  </body>
```

```
</html>
```

HTTP/1.1 404 NOT FOUND

Client request: GET /tst.html HTTP/1.1\r\n

Changed test.html to tst.html, a file that doesn't exist

```
HTTP/1.1 404 NOT FOUND
```

```
/tst.html Not Found
```

HTTP/1.1 400 BAD REQUEST

Client request: POST /test.html HTTP/1.1\r\n

Changed GET to POST request, which is a bad request

```
HTTP/1.1 400 BAD REQUEST
```

Proxy server Requirements:

- Maintain a cache of all previously requested objects
 - Cache their last modified date
- Receive HTTP requests from client
- The proxy server will:
 - Check if the requested object is in the cache
 - if the desired object is in the cache and up to date, then the proxy will return the object to the requesting client
 - If the desired object is in the cache and out of date, then the proxy will perform a conditional get request to the web server
 - If the desired object is not in the cache, then the proxy server will perform a get request to the web server
- The proxy server should be able to update the cached objects with the updated version if such is passed
- If the cached copy is not up to date: HTTP/1.1 200 OK
- If the cached copy of the object is up to date: HTTP/1.1 304 Not modified

Testing Proxy Server

1. Ensure that the proxy cache folder is empty
2. Open singlethreadedserver.py or multithreadedserver.py in the terminal
3. Run proxy.py in a separate terminal
4. Request from the server by running client.py in a third separate terminal
5. The proxy server should return that the cache folder does not contain the desired test file
6. With the file now cached in the proxy server, request again.
7. Client side should show 200 OK code as the updated version is located in the cache
8. Check the cache folder to see that the up to date version of test.html is in the folder

Printscreen of output:

See below screenshots of the results when the up-to-date file already exists in the cache managed by the proxy server.

Server Side Output

```
PS C:\Users\abenz\Documents\Code\webServer> & C:/Users/abenz/AppData/Local/Microsoft/WindowsApps/python3.10.exe c:/Users/abenz/Documents/Code/webServer/singleThreadedServer.py
[STARTING] server is starting...
[LISTENING] Server is listening on 192.168.56.1
[LISTENING] Server is listening on port 5050
█
```

Proxy side output

```
PS C:\Users\abenz\Documents\Code\webServer> python proxy.py
[STARTING] server is starting...
[LISTENING] Proxy Server is listening on 192.168.56.1
[LISTENING] Server is listening on 5051
GET /test.html HTTP/1.1

Fetched successfully from cache.
█
```

Client Side output

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\abenz\Documents\Code\webServer> python client.py
HTTP/1.1 200 OK

<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8" />
    <title></title>
    <meta name="author" content="" />
    <meta name="description" content="" />
    <meta name="viewport" content="width=device-width, initial-s
cale=1" />
  </head>

  <body>
    <p>
      Congratulations! Your Web Server is Working! And this file
is modified
    </p>
  </body>
</html>

PS C:\Users\abenz\Documents\Code\webServer> █
```