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Program should be able to be run through powershell by simply typing "py {path to server.py}" which should open the server. The server can then be connected to through the browser on port 8080. The main page can be accessed through "localhost:8080/index.html". If the user tries to request /index1.html, they should be given a 301 request and are redirected back to /index.html. If the user tries to request any other page they should be given a 404 error.

One known limitation is I can only get the server to connect through Microsoft Edge. I initially tried through Firefox but was getting issues with the SSL certificates. It may work through Chrome but it hasn't been tested.

Another issue is that the 301 response doesn't seem to be picked up by wireshark when it sends a redirect. It will pick it up if the "Location:" field is excluded, but when it's fully implemented wireshark seems to just skip over it and show the requests after the user is redirected. It can still be proven to be sent, as the browser redirects and will show that it received the request if you go to the inspect menu and look at the network info, so that is how the 301 info will be shown in this writeup instead of through wireshark.

One more issue which I can't seem to replicate is that sometimes there's a redirecting issue when using the localhost ip, where it adds the entire ip as a redirect when requesting /index1.html. If this occurs, it can be fixed by using 127.0.0.1 instead of localhost.

The following screenshot shows wireshark's feed after a user goes to /index.html, /doesntexist.html, then /index1.html:

| No. | Time | Source | Destination | Protocol | Length | Info |
|---|---|---|---|---|---|---|
| 88 | 5.981593 | 127.0.0.1 | 127.0.0.1 | HTTP | 763 | GET /index.html HTTP/1.1 |
| 95 | 6.002564 | 127.0.0.1 | 127.0.0.1 | HTTP | 44 | HTTP/1.1 200 OK |
| 99 | 6.014111 | 127.0.0.1 | 127.0.0.1 | HTTP | 685 | GET /guy.jpg HTTP/1.1 |
| 104 | 6.023206 | 127.0.0.1 | 127.0.0.1 | HTTP | 44 | HTTP/1.1 200 OK  (JPEG JFIF image) |
| 111 | 6.042122 | 127.0.0.1 | 127.0.0.1 | HTTP | 689 | GET /favicon.ico HTTP/1.1 |
| 115 | 6.055979 | 127.0.0.1 | 127.0.0.1 | HTTP | 44 | HTTP/1.1 404 |
| 410 | 24.647175 | 127.0.0.1 | 127.0.0.1 | HTTP | 726 | GET /doesntexist.html HTTP/1.1 |
| 414 | 24.650628 | 127.0.0.1 | 127.0.0.1 | HTTP | 44 | HTTP/1.1 404 |
| 482 | 32.869839 | 127.0.0.1 | 127.0.0.1 | HTTP | 721 | GET /index1.html HTTP/1.1 |
| 496 | 32.878952 | 127.0.0.1 | 127.0.0.1 | HTTP | 720 | GET /index.html HTTP/1.1 |
| 500 | 32.887990 | 127.0.0.1 | 127.0.0.1 | HTTP | 44 | HTTP/1.1 200 OK |
| 504 | 32.901843 | 127.0.0.1 | 127.0.0.1 | HTTP | 642 | GET /guy.jpg HTTP/1.1 |
| 509 | 32.908228 | 127.0.0.1 | 127.0.0.1 | HTTP | 44 | HTTP/1.1 200 OK  (JPEG JFIF image) |

Example of http 200 response:

Example of http 404 response:



Example of 301 request, received through the browser:

Filter   ☐ Invert   ☐ Hide data URLs   All   Fetch/XHR   JS   CSS   Img   Media   Font   Doc   WS   Wasm   Manifest   Other

☐ Preserve log   ☐ Disable cache   No throttling ▼

☐ Has blocked cookies   ☐ Blocked Requests   ☐ 3rd-party requests

10 ms   20 ms   30 ms   40 ms   50 ms   60 ms   70 ms   80 ms   90 ms   100 ms   110

**Name**

✕   Headers   Preview   Response   Initiator   Timing

index1.html
index.html
guy.jpg

**Request URL:** http://127.0.0.1:8080/index1.html
**Request Method:** GET
**Status Code:** ● 301 Moved Permanently
**Remote Address:** 127.0.0.1:8080
**Referrer Policy:** strict-origin-when-cross-origin

▼ **Response Headers**          View source

**Location:** /index.html

▼ **Request Headers**          View source

**Accept:** text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
**Accept-Encoding:** gzip, deflate, br
**Accept-Language:** en-US,en;q=0.9
**Connection:** keep-alive
**Host:** 127.0.0.1:8080
**sec-ch-ua:** "Chromium";v="110", "Not A(Brand";v="24", "Microsoft Edge";v="110"
**sec-ch-ua-mobile:** ?0
**sec-ch-ua-platform:** "Windows"
**Sec-Fetch-Dest:** document
**Sec-Fetch-Mode:** navigate
**Sec-Fetch-Site:** none
**Sec-Fetch-User:** ?1
**Upgrade-Insecure-Requests:** 1
**User-Agent:** Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/11

3 requests   121 kl