Task 1:

Find a website that runs on HTTP. Access this website using your device and capture network traces.

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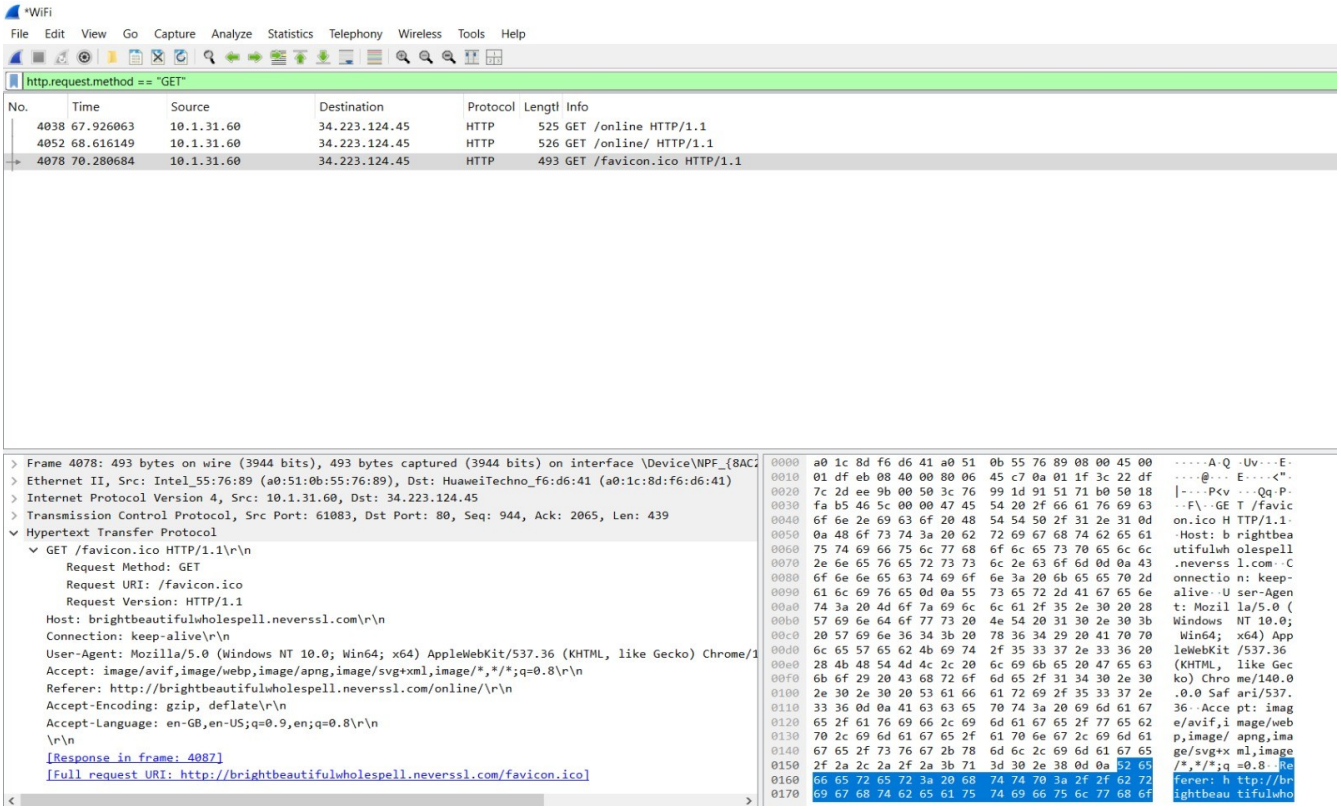


Task 4:

For the HTTP based website access, answer the following after analysing collected traces of HTTP:

1. **What is the name of website?**

   When I opened Wireshark and looked at the captured packets, I checked the first HTTP request.

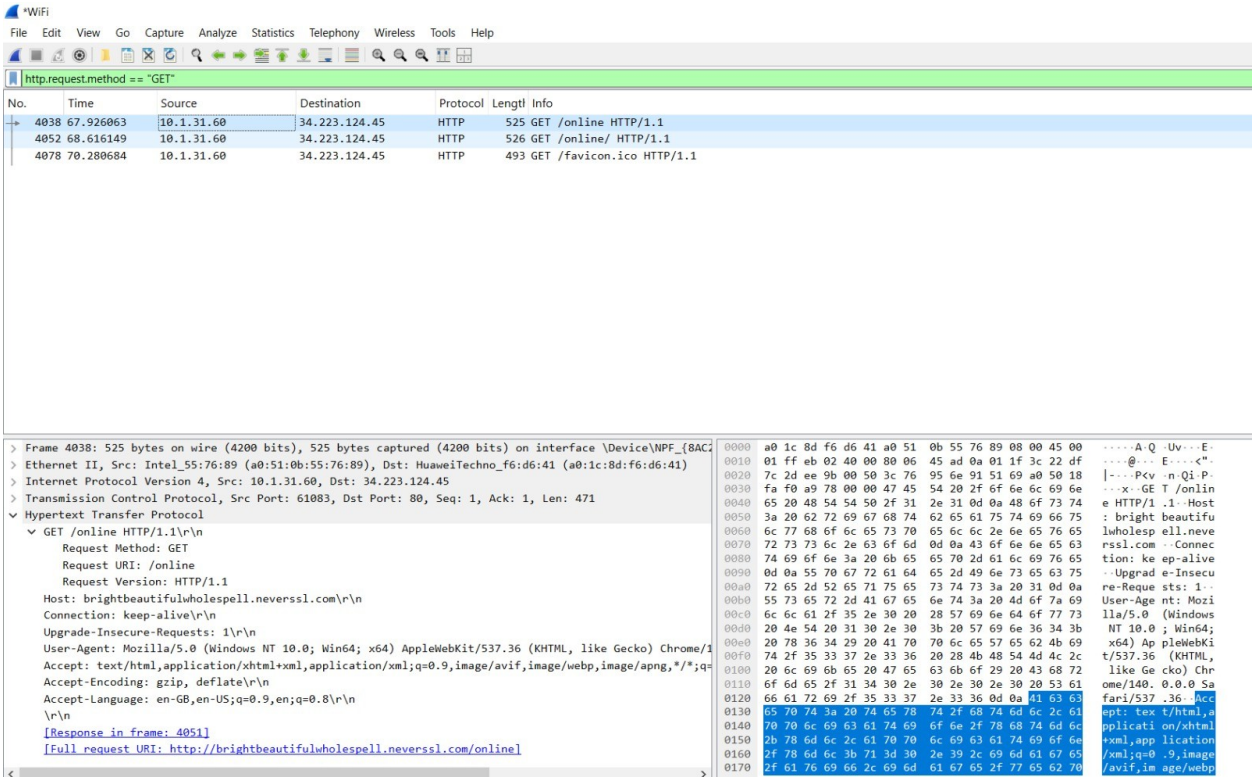
   - In the **Host header** of the GET request, I saw the domain `neverssl.com`.
   - So, the website I accessed was **Neverssl**.

2. **Find the packet that contains the first GET request for the website you have accessed.**

In Wireshark, I applied the display filter:

```
http.request
```

- This filtered out all the packets and only showed the HTTP requests.
- The very first one in the list was the **initial GET request for the homepage** of Neverssl.
- That's the packet I used to analyze headers.

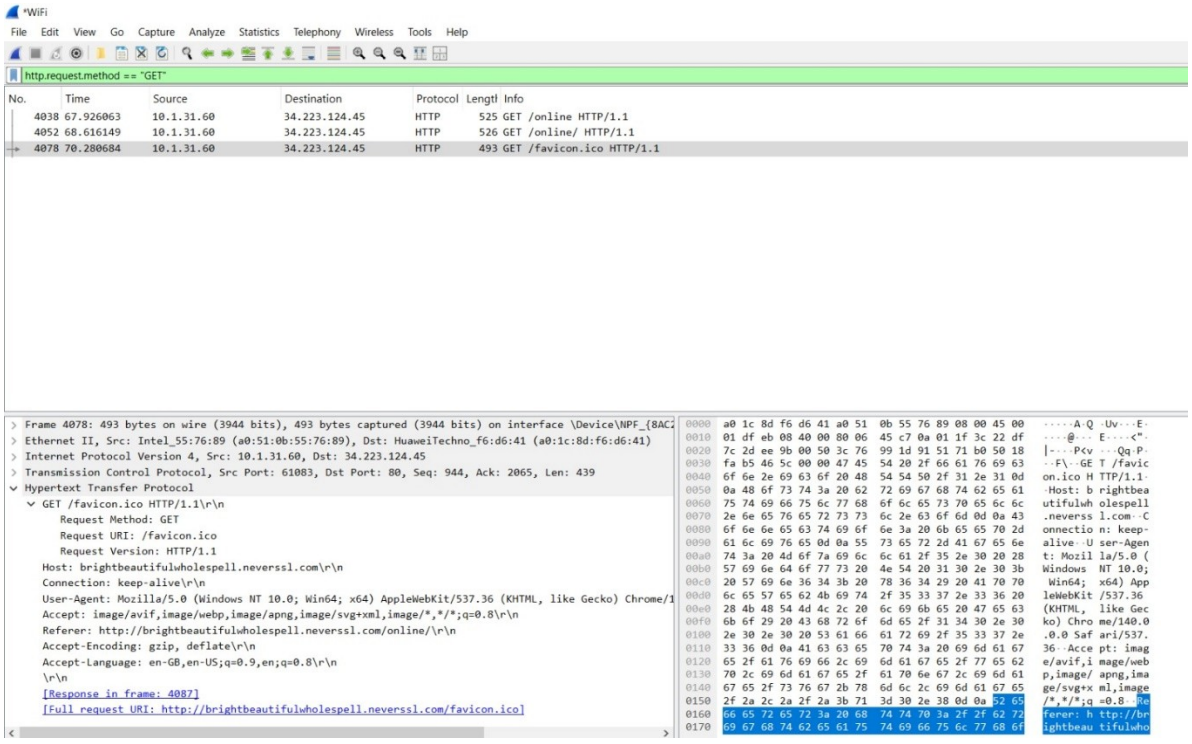


3. **Describe all headers and their values in this GET request message.**

When I expanded the HTTP section of the first GET request packet, I found these headers:

- **Host:** neverssl.com
- **User-Agent:** This showed the browser details
- **Accept:** Listed the content types the browser can accept
- **Accept-Language:** Shows the language preference
- **Accept-Encoding:** Supported compression (e.g., `gzip, deflate`).

- **Connection:** Usually it was `keep-alive` (this is important for persistent connections).
- Sometimes there were also **Upgrade-Insecure-Requests** and **Cache-Control** depending on the browser.

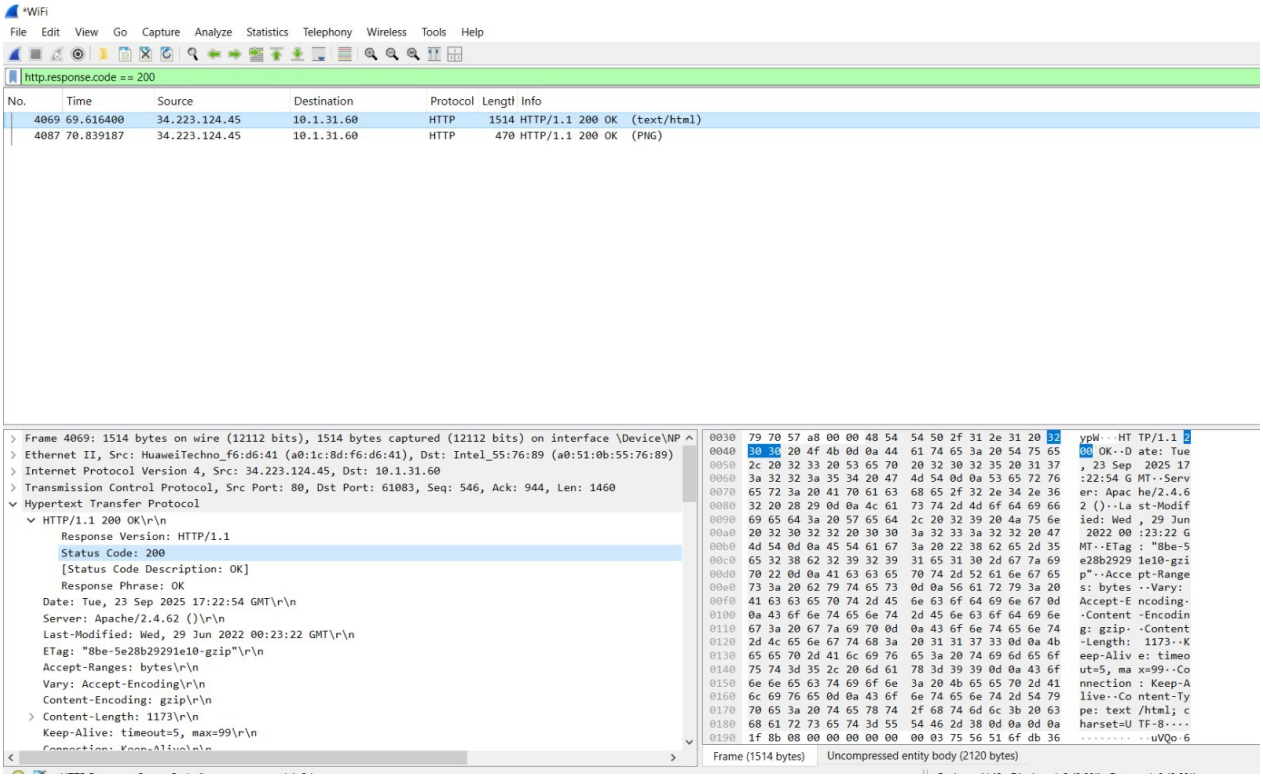


4. **Identify the status code in the first server response**.

I used the filter:

`http.response`

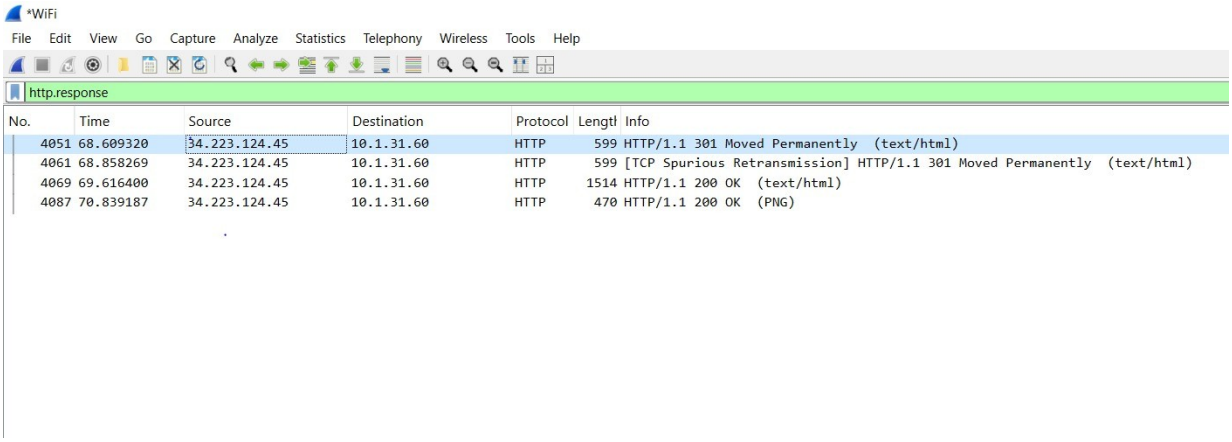
- The first response packet right after the GET request showed the **Status Code** field.
- For Neverssl, it was `200 OK` (meaning the page loaded successfully).



5. How many HTTP response messages are exchanged in total?

Still using the `http.response` filter, I scrolled through the capture.

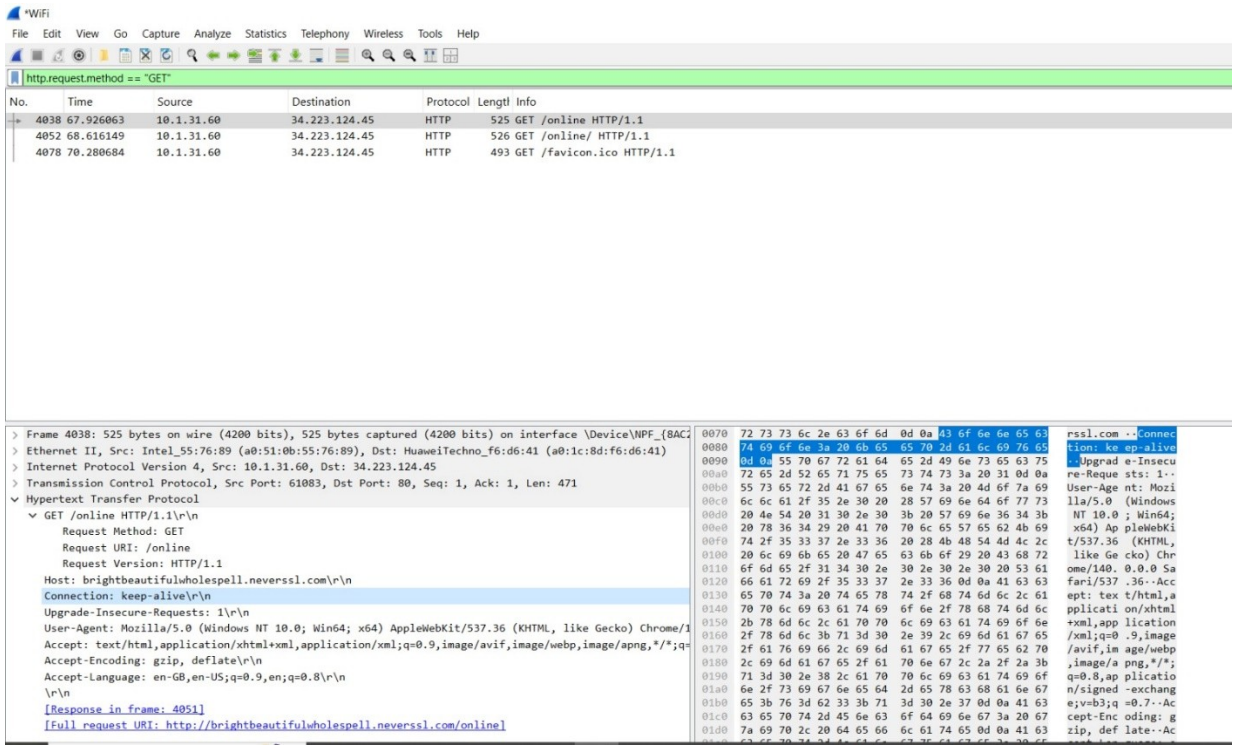
- Each HTTP response message was counted.
- For my test, I saw multiple responses (one for the main HTML page, and additional ones for CSS/images/scripts).
- I counted them one by one to get the total number.



6. **Determine whether the connection is persistent or not. Justify with evidence from packet captures.**

I looked at the **Connection header** inside the GET request and the server responses.

- Since it said `Connection: keep-alive` and I noticed that the same TCP connection was reused for multiple requests/responses, it showed that the connection was **persistent**.
- In a non-persistent connection, every object would have required a new TCP handshake, but here multiple responses came through the same stream.


*WiFi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
http.request.method == "GET"
No. Time Source Destination Protocol Lengtl Info
4038 67.926063 10.1.31.60 34.223.124.45 HTTP 525 GET /online HTTP/1.1
4052 68.616149 10.1.31.60 34.223.124.45 HTTP 526 GET /online/ HTTP/1.1
4078 70.280684 10.1.31.60 34.223.124.45 HTTP 493 GET /favicon.ico HTTP/1.1
Frame 4038: 525 bytes on wire (4200 bits), 525 bytes captured (4200 bits) on interface \Device\NPF_{8AC2
Ethernet II, Src: Intel_55:76:89 (a0:51:0b:55:76:89), Dst: HuaweiTechno_f6:d6:41 (a0:1c:8d:f6:d6:41)
Internet Protocol Version 4, Src: 10.1.31.60, Dst: 34.223.124.45
Transmission Control Protocol, Src Port: 61083, Dst Port: 80, Seq: 1, Ack: 1, Len: 471
Hypertext Transfer Protocol
GET /online HTTP/1.1\r\n
Request Method: GET
Request URI: /online
Request Version: HTTP/1.1
Host: brightbeautifulwholespell.neverssl.com\r\n
Connection: keep-alive\r\n
Upgrade-Insecure-Requests: 1\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/1
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=
Accept-Encoding: gzip, deflate\r\n
Accept-Language: en-GB,en-US;q=0.9,en;q=0.8\r\n
\r\n
[Response in frame: 4051]
[Full request URI: http://brightbeautifulwholespell.neverssl.com/online]
0070 72 73 73 6c 2e 63 6f 6d 0d 0a 43 6f 6e 6e 65 63 rssl.com ··Connec
0080 74 69 6f 6e 3a 20 6b 65 65 70 2d 61 6c 69 76 65 tion: ke ep-alive
0090 0d 0a 55 70 67 72 61 64 65 2d 49 6e 73 65 63 75 ··Upgrad e-Insecu
00a0 72 65 2d 52 65 71 75 65 73 74 73 3a 20 31 0d 0a re-Reque sts: 1··
00b0 55 73 65 72 2d 41 67 65 6e 74 3a 20 4d 6f 7a 69 User-Age nt: Mozi
00c0 6c 6c 61 2f 35 2e 30 20 28 57 69 6e 64 6f 77 73 lla/5.0 (Windows
00d0 20 4e 54 20 31 30 2e 30 3b 20 57 69 6e 36 34 3b NT 10.0 ; Win64;
00e0 20 78 36 34 29 20 41 70 70 6c 65 57 65 62 4b 69 x64) Ap pleWebKi
00f0 74 2f 35 33 37 2e 33 36 20 28 4b 48 54 4d 4c 2c t/537.36 (KHTML,
0100 20 6c 69 6b 65 20 47 65 63 6b 6f 29 20 43 68 72 like Ge cko) Chr
0110 6f 6d 65 2f 31 34 30 2e 30 2e 30 2e 30 20 53 61 ome/140. 0.0.0 Sa
0120 66 61 72 69 2f 35 33 37 2e 33 36 0d 0a 41 63 63 fari/537 .36··Acc
0130 65 70 74 3a 20 74 65 78 74 2f 68 74 6d 6c 2c 61 ept: tex t/html,a
0140 70 70 6c 69 63 61 74 69 6f 6e 2f 78 68 74 6d 6c pplicati on/xhtml
0150 2b 78 6d 6c 2c 61 70 70 6c 69 63 61 74 69 6f 6e +xml,app lication
0160 2f 78 6d 6c 3b 71 3d 30 2e 39 2c 69 6d 61 67 65 /xml;q=0 .9,image
0170 2f 61 76 69 66 2c 69 6d 61 67 65 2f 77 65 62 70 /avif,im age/webp
0180 2c 69 6d 61 67 65 2f 61 70 6e 67 2c 2a 2f 2a 3b ,image/a png,*/*;
0190 71 3d 30 2e 38 2c 61 70 70 6c 69 63 61 74 69 6f q=0.8,ap plicatio
01a0 6e 2f 73 69 67 6e 65 64 2d 65 78 63 68 61 6e 67 n/signed -exchang
01b0 65 3b 76 3d 62 33 3b 71 3d 30 2e 37 0d 0a 41 63 e;v=b3;q =0.7··Ac
01c0 63 65 70 74 2d 45 6e 63 6f 64 69 6e 67 3a 20 67 cept-Enc oding: g
01d0 7a 69 70 2c 20 64 65 66 6c 61 74 65 0d 0a 41 63 zip, def late··Ac