

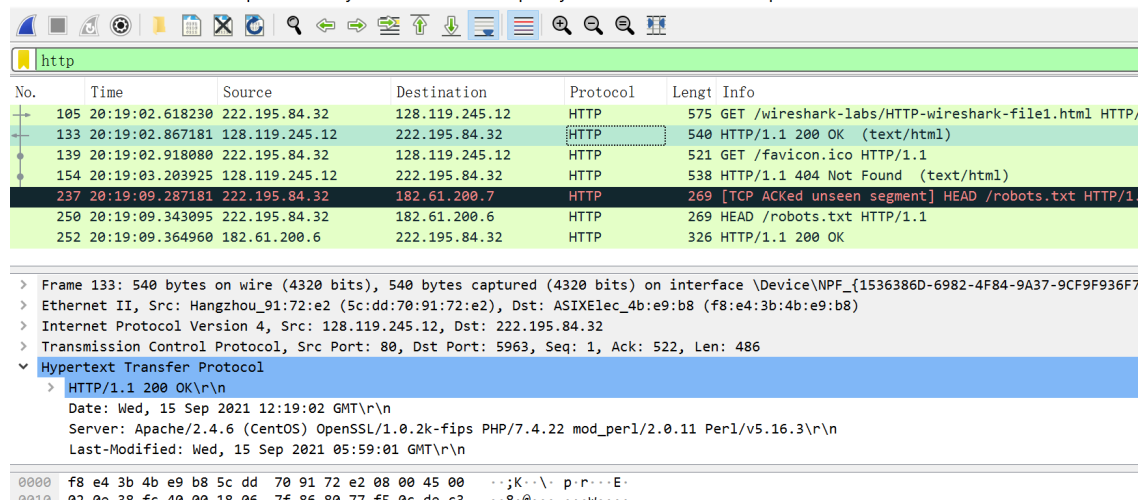
## 实验二

### Wireshark Lab: HTTP

阅读实验文档，按照文档进行各个部分的操作。

#### 1. The Basic HTTP GET/response interaction

按照指示操作，打开wireshark，输入http筛选，等待一会开始捕捉，打开网页<http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html>，停止捕捉，在wireshark中找到对应部分，如图



根据捕捉到的结果回答问题：

1. browser version: 1.1 sever version: 1.1
2. 在GET中的Hypertext Transfer Protocol下的Accept-Language找到  
Accept-Language: zh-CN,zh;q=0.9,en;q=0.8,en-GB;q=0.7,en-US;q=0.6\r\n
3. 我的电脑地址: 222.195.84.32 server地址: 128.119.245.12  
在Internet Protocol中找到
4. Status code在回复的Hypertext Transfer Protocol中找到  
HTTP/1.1 200 OK\r\n
5. Last-Modified: Wed, 15 Sep 2021 05:59:01 GMT\r\n
6. 在回复的Hypertext Transfer Protocol的Content-Length中:  
Content-Length: 128\r\n  
[Content length: 128]
7. 没有在raw data中找到所有的header

#### 2. The HTTP CONDITIONAL GET/response interaction

按照操作清楚缓存后重新进入网站<http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html>, 在刷新一次, 在wireshark中成功抓包:

No.	Time	Source	Destination	Protocol	Length	Info
290	22:13:31.792187	222.195.84.32	128.119.245.12	HTTP	575	GET /wireshark-labs/HTTP-wireshark-file2.html HT
309	22:13:32.086662	128.119.245.12	222.195.84.32	HTTP	784	HTTP/1.1 200 OK (text/html)
317	22:13:32.138782	222.195.84.32	128.119.245.12	HTTP	521	GET /favicon.ico HTTP/1.1
331	22:13:32.341895	222.195.84.32	180.109.171.53	HTTP	282	POST /cgi-bin/httpconn HTTP/1.1
333	22:13:32.353452	180.109.171.53	222.195.84.32	HTTP	303	HTTP/1.1 200 OK (text/octet)
335	22:13:32.432449	128.119.245.12	222.195.84.32	HTTP	538	HTTP/1.1 404 Not Found (text/html)
362	22:13:33.718815	222.195.84.32	128.119.245.12	HTTP	687	GET /wireshark-labs/HTTP-wireshark-file2.html HT
370	22:13:34.019452	128.119.245.12	222.195.84.32	HTTP	293	HTTP/1.1 304 Not Modified

[Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file2.html]  
File Data: 371 bytes

Line-based text data: text/html (10 lines)

```

\n
<html>\n
\n
Congratulations again! Now you've downloaded the file lab2-2.html. <br>\n
This file's last modification date will not change. <p>\n
Thus if you download this multiple times on your browser, a complete copy <br>\n

```

190 73 65 74 3d 55 54 46 2d 38 0d 0a 0d 0a 0a 3c 68 set=UTF- 8...<h  
1a0 74 6d 6c 3e 0a 0a 43 6f 6e 67 72 61 74 75 6c 61 tml> Co ngratula  
1b0 74 69 6f 6e 73 20 61 67 61 69 6e 21 20 20 4e 6f tions ag ain! No  
1c0 77 20 79 6f 75 27 76 65 20 64 6f 77 6e 6c 6f 61 w you've downloa  
1d0 64 65 64 20 74 68 65 20 66 69 6c 65 20 6c 61 62 ded the file lab  
1e0 32 2d 32 2e 68 74 6d 6c 2e 20 3c 62 72 3e 0a 54 2-2.html . <br> T  
1f0 68 69 73 20 66 69 6c 65 27 73 20 6c 61 73 74 20 his file 's last  
200 6d 6f 64 69 66 69 63 61 74 69 6f 6e 20 64 61 74 modifica tion dat  
210 65 20 73 20 66 69 6c 65 65 74 73 20 63 61 6c 67 a will not chang

回答问题:

8. 并没有发现

9. 有, 在Line-based text data: text/html (10 lines) 中

Line-based text data: text/html (10 lines)

```

\n
<html>\n
\n
Congratulations again! Now you've downloaded the file lab2-2.html. <br>\n
This file's last modification date will not change. <p>\n
Thus if you download this multiple times on your browser, a complete copy <br>\n
will only be sent once by the server due to the inclusion of the IN-MODIFIED-SINCE<br>\n
field in your browser's HTTP GET request to the server.\n
\n
</html>\n

```

10. 有, 显示If-Modified-Since: Wed, 15 Sep 2021 05:59:01 GMT\r\n

11. 回复HTTP/1.1 304 Not Modified\r\n, 因为这个页面的缓存还在, 文件并没有改变, 所以就没有回复内容, 直接使用缓存就行

### 3. Retrieving Long Documents

类似2中的操作, 清除缓存, 进入网站<http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file3.html>并捕获。

回答问题

12. 只有一个GET request, 含有GET message for the Bill of Rights的:

File Data: 4500 bytes

Line-based text data: text/html (98 lines)

```

<html><head> \n
<title>Historical Documents:THE BILL OF RIGHTS</title></head>\n
\n
\n
<body bgcolor="#ffffff" link="#330000" vlink="#666633">\n
<p><br>\n
</p>\n

```

0160 55 54 46 2d 38 0d 0a 0d 0a 3c 68 74 6d 6c 3e 3c UTF-8... <html><  
0170 68 65 61 64 3e 20 0a 3c 74 69 74 6c 65 3e 48 69 head> < title>Hi

13. 包含相应的包:

No.	Time	Source	Destination	Protocol	Length	Info
140	22:38:06.484630	128.119.245.12	222.195.84.32	HTTP	535	HTTP/1.1 200 OK (text/html)

14. status code and phrase: 200 OK

#### 15. 需要4个

```

> Internet Protocol version 4, Src: 128.119.245.12, Dst: 222.195.84.32
> Transmission Control Protocol, Src Port: 80, Dst Port: 6768, Seq: 4381, Ack: 522,
  [4 Reassembled TCP Segments (4861 bytes): #136(1460), #139(1460), #137(1460), #140(1460)]
    [Frame: 136, payload: 0-1459 (1460 bytes)]
    [Frame: 139, payload: 1460-2919 (1460 bytes)]
    [Frame: 137, payload: 2920-4379 (1460 bytes)]
    [Frame: 140, payload: 4380-4860 (481 bytes)]
    [Segment count: 4]
    [Reassembled TCP length: 4861]
  
```

0160	55 54 46 2d 38 0d 0a 0d 0a 3c 68 74 6d 6c 3e 3c	UTF-8...	<html><
0170	68 65 61 64 3e 20 0a 3c 74 69 74 6c 65 3e 48 69	head>	< title>Hi
0180	73 74 6f 72 69 63 61 6c 20 44 6f 63 75 6d 65 6e	storical	Documen

#### 4. HTML Documents with Embedded Objects

和上面操作类似，清除缓存，进入网站<http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html>，捕获。

回答问题：

16.

No.	Time	Source	Destination	Protocol	Length	Info
63	22:54:10.604404	222.195.84.32	128.119.245.12	HTTP	575	GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1
76	22:54:10.897932	128.119.245.12	222.195.84.32	HTTP	1355	HTTP/1.1 200 OK (text/html)
77	22:54:10.927432	222.195.84.32	128.119.245.12	HTTP	521	GET /pearson.png HTTP/1.1
84	22:54:11.207557	128.119.245.12	222.195.84.32	HTTP	745	HTTP/1.1 200 OK (PNG)
88	22:54:11.389047	222.195.84.32	178.79.137.164	HTTP	488	GET /8E_cover_small.jpg HTTP/1.1
92	22:54:11.845996	178.79.137.164	222.195.84.32	HTTP	225	HTTP/1.1 301 Moved Permanently

发送了三个HTTP GET请求，地址是128.119.245.12 128.119.145.12 178.79.137.164

#### 17. 根据捕捉到的结果，应该是串行下载

77	22:54:10.927432	222.195.84.32	128.119.245.12	HTTP	521	GET /pearson.png HTTP/1.1
84	22:54:11.207557	128.119.245.12	222.195.84.32	HTTP	745	HTTP/1.1 200 OK (PNG)
88	22:54:11.389047	222.195.84.32	178.79.137.164	HTTP	488	GET /8E_cover_small.jpg HTTP/1.1
92	22:54:11.845996	178.79.137.164	222.195.84.32	HTTP	225	HTTP/1.1 301 Moved Permanently

#### 5. HTTP Authentication

类似的，清除缓存，进入网站[http://gaia.cs.umass.edu/wireshark-labs/protected\\_pages/HTTP-wireshark-file5.html](http://gaia.cs.umass.edu/wireshark-labs/protected_pages/HTTP-wireshark-file5.html)，输入信息，成功抓包。

No.	Time	Source	Destination	Protocol	Length	Info
60	23:08:29.077375	222.195.84.32	128.119.245.12	HTTP	591	GET /wireshark-labs/protected_pages/HTTP-wireshark-file5.html HTTP/1.1
81	23:08:29.398670	128.119.245.12	222.195.84.32	HTTP	771	HTTP/1.1 401 Unauthorized (text/html)
107	23:08:40.800813	222.195.84.32	128.119.245.12	HTTP	676	GET /wireshark-labs/protected_pages/HTTP-wireshark-file5.html HTTP/1.1
110	23:08:41.103603	128.119.245.12	222.195.84.32	HTTP	544	HTTP/1.1 200 OK (text/html)

回答问题：

18. response: HTTP/1.1 401 Unauthorized (text/html)

19. 多了Authorization部分

```

Connection: keep-alive\r\n
Cache-Control: max-age=0\r\n
Authorization: Basic d2lyZXNoYXJrLXN0dWR1bnRzOm5ldHdvcm0=\r\n
  Credentials: wireshark-students:network
DNT: 1\r\n
Upgrade-Insecure-Requests: 1\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36
  
```