

VILNIUS UNIVERSITY SIAULIAI ACADEMY

PROGRAMŲ SISTEMOS BACHELOR STUDY PROGRAMME

Software engineering

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Computer Networks
Laboratory work No.1
HTTP

Laboratory Work Report

Table of contents

The Basic HTTP GET/response interaction	2
2. The HTTP CONDITIONAL GET/response interaction	3
3. Retrieving Long Documents	4
4. HTML Documents with Embedded Objects	5
5. HTTP Authentication	6

1. The Basic HTTP GET/response interaction

- 1. Is your browser running HTTP version 1.0 or 1.1? What version of HTTP is the server running?
 - a. Frame 1758 (GET):

GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1

b. Frame: 1760:

Answer: both use HTTP/1.1

2. What languages (if any) does your browser indicate that it can accept to the server?

Answer: The browser can accept Ukrainian (uk-UA), Ukrainian (uk).

- 3. What is the IP address of your computer? Of the gaia.cs.umass.edu server?
 - a. Frame 1758 (GET):

Source 192.168.1.135 Destination 128.119.245.12

Answer: my pc - 192.168.1.135 server - 128.119.245.12

4. What is the status code returned from the server to your browser?

|Info | HTTP/1.1 200 OK

Answer: status code: 200, phrase: OK

5. When was the HTML file that you are retrieving last modified at the server?

Last-Modified: Tue, 15 Apr 2025 05:59:01 GMT\r\n

Answer: Tue, 15 Apr 2025 05:59:01 GMT

6. How many bytes of content are being returned to your browser?

Content-Length: 128\r\n
[Content length: 128]

Answer: 128 byes

7. By inspecting the raw data in the packet content window, do you see any headers within the data that are not displayed in the packet-listing window? If so, name one.

Answer: There are no hidden headers, all are displayed.

2. The HTTP CONDITIONAL GET/response interaction

8. Inspect the contents of the first HTTP GET request from your browser to the server. Do you see an "IF-MODIFIED-SINCE" line in the HTTP GET?

GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1

Answer: No, there is no "IF-MODIFIED-SINCE" in the first GET request.

9. Inspect the contents of the server response. Did the server explicitly return the contents of the file? How can you tell?

```
Hypertext Transfer Protocol HTTP/1.1 200 OK\r\n

Content-Length: 371\r\n
```

Answer: Yes, the server returned the full content of the file. This is indicated by the status code <u>HTTP/1.1 200 OK</u> in Frame 137 and the <u>Content-Length: 371</u>.

10.Now inspect the contents of the second HTTP GET request from your browser to the server. Do you see an "IF-MODIFIED-SINCE:" line in the HTTP GET? If so, what information follows the "IF-MODIFIED-SINCE:" header?

Answer: No, the second GET request (Frame 150) also doesn't include an **If-Modified-Since:** line. The request is exactly the same as the first one.

11. What is the HTTP status code and phrase returned from the server in response to this second HTTP GET? Did the server explicitly return the contents of the file? Explain.

Answer: The status code is again <u>HTTP/1.1 200 OK</u> (Frame 178), which means the server returned the file contents again instead of saying "Not Modified". This confirms that the conditional GET did not happen - likely because the browser didn't send the <u>If-Modified-Since</u> header.

3. Retrieving Long Documents

12. How many HTTP GET request messages did your browser send? Which packet number in the trace contains the GET message for the Bill or Rights?

No. Time Source Destination Protocol Length Info 556 2.450618 192.168.1.136 128.119.245.12 HTTP 492 GET / wireshark-labs/HTTP-wireshark-file3.html HTTP/1.1

Answer: 1 HTTP GET request message; Frame 556

13. Which packet number in the trace contains the status code and phrase associated with the response to the HTTP GET request?

No. Time Source Destination Protocol Length Info
634 2.642690 128.119.245.12 192.168.1.136 HTTP 583 HTTP/1.1 200

OK (text/html)

Frame 634: 583 bytes on wire (4664 bits), 583 bytes captured (4664 bits) on interface en0, id 0

Answer: Frame 634

14. What is the status code and phrase in the response?

Answer: HTTP/1.1 200 OK

15. How many data-containing TCP segments were needed to carry the single HTTP response and the text of the Bill of Rights?

[4 Reassembled TCP Segments (4861 bytes): #631(1448), #632(1448), #633(1448), #634(517)]

Answer: 4 TCP segments

4. HTML Documents with Embedded Objects

16. How many HTTP GET request messages did your browser send? To which Internet addresses were these GET requests sent?

Destination Protocol Length Info Time Source 2589 36.804835 192.168.1.136 128.119.245.12 GET / HTTP 492 wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1 Time Source Destination Protocol Length Info 2619 36.982923 192.168.1.136 128.119.245.12 570 GET / pearson.png HTTP/1.1

No.	Time	Source	Destination	Protocol	Length	Info
2655	37.541587	192.168.1.136	178.79.137.164	HTTP	537	GET /
8E_cove	r_small.jpg HTTI	2/1.1				
No.	Time	Source	Destination	Protocol	l anath	Tnfo
140	I TIIIC	Source	DESCINACION	PIOLOCOL	Length	11110
	38.171675				_	GET /

Answer: browser sent 4 HTTP GET request messages. Internet addresses, to which these GET requests were sent, are highlighted.

17. Can you tell whether your browser downloaded the two images serially, or whether they were downloaded from the two web sites in parallel? Explain.

No.	Time	Source	Destination 128.119.245.12	Protoco ¹	Length	Info
2619	36.982923	192.168.1.136		HTTP	570	GET /
pearson	.png HTTP/1.1		-	-		
No.	Time	Source	Destination	Protocol	3	Info
2655	37.541587	192.168.1.136	178.79.137.164	HTTP		GET /
8E_cove	r_small.jpg HTT	P/1.1				

Answer: The downloads were serially:

- pearson.png was requested at 36.982923, and the response (HTTP 200) was received at 37.100357.
- 8E_cover_small.jpg was requested later, at 37.541587.

The difference between these requests is about half a second, so they were not downloaded in parallel. The browser first completed one download before starting the next.

5. HTTP Authentication

18. What is the server's response (status code and phrase) in response to the initial HTTP GET message from your browser?

No.	Time		Source	[Destination	Protocol	Length	Info
	8 <mark>54</mark> 3.290	9423	128.119.245.12	:	192.168.1.136	HTTP	783	HTTP/1.1 401
Unau ⁻	thorized	(text/ht	ml)					

Answer:

- status code: 401

- phrase: Unauthorized

19. When your browser's sends the HTTP GET message for the second time, what new field is included in the HTTP GET message?

Authorization: Basic d2lyZXNoYXJrLXN0dWRlbnRzOm5ldHdvcms=\r\n Credentials: wireshark-students:network

Answer: field "Authorization: Basic"