Практична робота №2
з курсу «Комп'ютерні мережі»

Виконав: студент 3 курсу
групи КА-74
Коваленко М.Д.
Прийняв: Кухарєв С.О.

Київ – 2020р.

Пакети для відповідей 1-7:

```
No.     Time        Source          Destination       Protocol Length Info
    164 15.057397   192.168.0.100   128.119.245.12    HTTP     407    GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/
1.1
Frame 164: 407 bytes on wire (3256 bits), 407 bytes captured (3256 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: IntelCor_e3:95:22 (a0:c5:89:e3:95:22), Dst: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0)
Internet Protocol Version 4, Src: 192.168.0.100, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 52112, Dst Port: 80, Seq: 1, Ack: 1, Len: 353
Hypertext Transfer Protocol
    GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n
        [Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n]
        Request Method: GET
        Request URI: /wireshark-labs/HTTP-wireshark-file1.html
        Request Version: HTTP/1.1
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:43.0) Gecko/20100101 Firefox/43.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
    Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html]
    [HTTP request 1/3]
    [Response in frame: 168]
    [Next request in frame: 172]


No.     Time        Source          Destination       Protocol Length Info
    168 15.187069   128.119.245.12  192.168.0.100     HTTP     540    HTTP/1.1 200 OK  (text/html)
Frame 168: 540 bytes on wire (4320 bits), 540 bytes captured (4320 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0), Dst: IntelCor_e3:95:22 (a0:c5:89:e3:95:22)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.0.100
Transmission Control Protocol, Src Port: 80, Dst Port: 52112, Seq: 1, Ack: 354, Len: 486
Hypertext Transfer Protocol
    HTTP/1.1 200 OK\r\n
        [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
        Response Version: HTTP/1.1
        Status Code: 200
        [Status Code Description: OK]
        Response Phrase: OK
    Date: Mon, 20 Apr 2020 08:40:54 GMT\r\n
    Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
    Last-Modified: Mon, 20 Apr 2020 05:59:02 GMT\r\n
    ETag: "80-5a3b29894adbe"\r\n
    Accept-Ranges: bytes\r\n
    Content-Length: 128\r\n
    Keep-Alive: timeout=5, max=100\r\n
    Connection: Keep-Alive\r\n
    Content-Type: text/html; charset=UTF-8\r\n
    \r\n
    [HTTP response 1/3]
    [Time since request: 0.129672000 seconds]
    [Request in frame: 164]
    [Next request in frame: 172]
    [Next response in frame: 176]
    [Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html]
    File Data: 128 bytes
Line-based text data: text/html (4 lines)
```

1. Обидва використовують версію 1.1

2. Російську, англійську: Accept-Language:
ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3

3. Веб-сервера: 128.119.245.12

Мого комп'ютера: 192.168.0.10

4. Статусний код: 200

5. Last-Modified: Mon, 20 Apr 2020 05:59:02 GMT

6. Content-Length: 128

7. не   помітила

Пакети для відповідей 8-11:

```
No.      Time         Source              Destination         Protocol Length Info
     864 11.318463    2.21.89.27          192.168.0.100       HTTP     205    HTTP/1.1 200 OK  (text/html)
Frame 864: 205 bytes on wire (1640 bits), 205 bytes captured (1640 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0), Dst: IntelCor_e3:95:22 (a0:c5:89:e3:95:22)
Internet Protocol Version 4, Src: 2.21.89.27, Dst: 192.168.0.100
Transmission Control Protocol, Src Port: 80, Dst Port: 52446, Seq: 1, Ack: 83, Len: 151
Hypertext Transfer Protocol
    HTTP/1.1 200 OK\r\n
        [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
        Response Version: HTTP/1.1
        Status Code: 200
        [Status Code Description: OK]
        Response Phrase: OK
    Content-Type: text/html\r\n
    Content-Length: 26\r\n
    Date: Mon, 20 Apr 2020 09:16:34 GMT\r\n
    Connection: keep-alive\r\n
    \r\n
    [HTTP response 1/1]
    [Time since request: 0.003472000 seconds]
    [Request in frame: 862]
    [Request URI: http://ncc.avast.com/ncc.txt]
    File Data: 26 bytes
Line-based text data: text/html (1 lines)


No.      Time         Source              Destination         Protocol Length Info
     369 4.752221     192.168.0.100       128.119.245.12      HTTP     518    GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/
1.1
Frame 369: 518 bytes on wire (4144 bits), 518 bytes captured (4144 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: IntelCor_e3:95:22 (a0:c5:89:e3:95:22), Dst: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0)
Internet Protocol Version 4, Src: 192.168.0.100, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 52445, Dst Port: 80, Seq: 1, Ack: 1, Len: 464
Hypertext Transfer Protocol
    GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n
        [Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n]
        Request Method: GET
        Request URI: /wireshark-labs/HTTP-wireshark-file1.html
        Request Version: HTTP/1.1
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:43.0) Gecko/20100101 Firefox/43.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
    Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    If-Modified-Since: Mon, 20 Apr 2020 05:59:02 GMT\r\n
    If-None-Match: "80-5a3b29894adbe"\r\n
    Cache-Control: max-age=0\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html]
    [HTTP request 1/1]
    [Response in frame: 383]
```

8.   ні
9.   так
10.   так. If-Modified-Since: Mon, 20 Apr 2020 05:59:02 GMT
11.   304 Not Modified\r\n. Не повернув

Пакети для відповідей 12-15:

```
No.      Time         Source              Destination         Protocol Length Info
     279 14.720665    192.168.0.101       2.21.109.136        HTTP     487    GET /pub/firefox/releases/44.0b1/update/win32/ru/
firefox-44.0b1.complete.mar HTTP/1.1
Frame 279: 487 bytes on wire (3896 bits), 487 bytes captured (3896 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: IntelCor_e3:95:22 (a0:c5:89:e3:95:22), Dst: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0)
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 2.21.109.136
Transmission Control Protocol, Src Port: 56559, Dst Port: 80, Seq: 2, Ack: 1, Len: 433
Hypertext Transfer Protocol
    GET /pub/firefox/releases/44.0b1/update/win32/ru/firefox-44.0b1.complete.mar HTTP/1.1\r\n
    Host: download.cdn.mozilla.net\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:43.0) Gecko/20100101 Firefox/43.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
    Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
    Range: bytes=600000-899999\r\n
    If-Range: "b657348a9fc3c5c7f4b89bcfcd48fed5"\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://download.cdn.mozilla.net/pub/firefox/releases/44.0b1/update/win32/ru/firefox-44.0b1.complete.mar]
    [HTTP request 1/1]
    [Response in frame: 537]
```

```
> Frame 285: 754 bytes on wire (6032 bits), 754 bytes captured (6032 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-B9786A7A462A}, id 0
> Ethernet II, Src: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0), Dst: IntelCor_e3:95:22 (a0:c5:89:e3:95:22)
> Internet Protocol Version 4, Src: 2.21.109.136, Dst: 192.168.0.101
> Transmission Control Protocol, Src Port: 80, Dst Port: 56559, Seq: 299738, Ack: 436, Len: 700
> [207 Reassembled TCP Segments (300437 bytes): #14(437), #15(1460), #16(1460), #17(1460), #18(1460), #20(1460), #22(1460), #23(1460), #24(1460), #26(1460), #27(1460), #2
v Hypertext Transfer Protocol
    > HTTP/1.1 206 Partial Content\r\n
      Accept-Ranges: bytes\r\n
      Content-Type: application/octet-stream\r\n
      ETag: "b657348a9fc3c5c7f4b89bcfcd48fed5"\r\n
      Last-Modified: Fri, 18 Dec 2015 00:20:11 GMT\r\n
      x-amz-replication-status: COMPLETED\r\n
      x-amz-storage-class: STANDARD_IA\r\n
      x-amz-version-id: ZrwdsJkJ7OTN0Zsq6KvaBxxgwDECIThF\r\n
      Date: Sun, 26 Apr 2020 06:32:30 GMT\r\n
      Content-Range: bytes 2400000-2699999/51365407\r\n
    > Content-Length: 300000\r\n
      Connection: keep-alive\r\n
      \r\n
      [HTTP response 1/1]
      [Time since request: 0.170029000 seconds]
      [Request in frame: 9]
      [Request URI: http://download.cdn.mozilla.net/pub/firefox/releases/44.0b1/update/win32/ru/firefox-44.0b1.complete.mar]
      File Data: 300000 bytes
> Data (300000 bytes)
```

12.   одне

13.

```
> Transmission Control Protocol, Src Port: 80, Dst Port: 56559, Seq: 299738, Ack: 436, Len: 700
```

14.   HTTP/1.1 206 Partial Content\r\n

15.   ні,не зустрічаються

Пакети HTTP GET для відповідей 16-17:

```
No.     Time          Source            Destination       Protocol Length Info
    214 5.440221      192.168.0.101     128.119.245.12    HTTP     407     GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/
1.1
Frame 214: 407 bytes on wire (3256 bits), 407 bytes captured (3256 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: IntelCor_e3:95:22 (a0:c5:89:e3:95:22), Dst: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0)
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 128.119.245.12
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 393
    Identification: 0xcfce (53198)
    Flags: 0x4000, Don't fragment
    ...0 0000 0000 0000 = Fragment offset: 0
    Time to live: 128
    Protocol: TCP (6)
    Header checksum: 0xf30e [validation disabled]
    [Header checksum status: Unverified]
    Source: 192.168.0.101
    Destination: 128.119.245.12
Transmission Control Protocol, Src Port: 56874, Dst Port: 80, Seq: 1, Ack: 1, Len: 353
Hypertext Transfer Protocol
    GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1\r\n
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:43.0) Gecko/20100101 Firefox/43.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
    Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html]
    [HTTP request 1/4]
    [Response in frame: 218]
    [Next request in frame: 220]
```

```
No.      Time        Source              Destination         Protocol Length Info
     220 5.605193    192.168.0.101       128.119.245.12      HTTP     424    GET /pearson.png HTTP/1.1
Frame 220: 424 bytes on wire (3392 bits), 424 bytes captured (3392 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: IntelCor_e3:95:22 (a0:c5:89:e3:95:22), Dst: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0)
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 128.119.245.12
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 410
    Identification: 0xcfd0 (53200)
    Flags: 0x4000, Don't fragment
    ...0 0000 0000 0000 = Fragment offset: 0
    Time to live: 128
    Protocol: TCP (6)
    Header checksum: 0xf2fb [validation disabled]
    [Header checksum status: Unverified]
    Source: 192.168.0.101
    Destination: 128.119.245.12
Transmission Control Protocol, Src Port: 56874, Dst Port: 80, Seq: 354, Ack: 1074, Len: 370
Hypertext Transfer Protocol
    GET /pearson.png HTTP/1.1\r\n
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:43.0) Gecko/20100101 Firefox/43.0\r\n
    Accept: image/png,image/*;q=0.8,*/*;q=0.5\r\n
    Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
    Accept-Encoding: gzip, deflate\r\n
    Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/pearson.png]
    [HTTP request 2/4]
    [Prev request in frame: 214]
    [Response in frame: 225]
    [Next request in frame: 321]
```

```
No.      Time        Source              Destination         Protocol Length Info
     234 5.851029    192.168.0.101       128.119.245.12      HTTP     438    GET /~kurose/cover_5th_ed.jpg HTTP/1.1
Frame 234: 438 bytes on wire (3504 bits), 438 bytes captured (3504 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: IntelCor_e3:95:22 (a0:c5:89:e3:95:22), Dst: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0)
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 128.119.245.12
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 424
    Identification: 0xcfd5 (53205)
    Flags: 0x4000, Don't fragment
    ...0 0000 0000 0000 = Fragment offset: 0
    Time to live: 128
    Protocol: TCP (6)
    Header checksum: 0xf2e8 [validation disabled]
    [Header checksum status: Unverified]
    Source: 192.168.0.101
```

```
    Destination: 128.119.245.12
Transmission Control Protocol, Src Port: 56875, Dst Port: 80, Seq: 1, Ack: 1, Len: 384
Hypertext Transfer Protocol
    GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n
    Host: manic.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:43.0) Gecko/20100101 Firefox/43.0\r\n
    Accept: image/png,image/*;q=0.8,*/*;q=0.5\r\n
    Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
    Accept-Encoding: gzip, deflate\r\n
    Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://manic.cs.umass.edu/~kurose/cover_5th_ed.jpg]
    [HTTP request 1/1]
    [Response in frame: 318]
```

```
No.     Time           Source                Destination           Protocol Length Info
      321 6.437342      192.168.0.101         128.119.245.12        HTTP     378    GET /favicon.ico HTTP/1.1
Frame 321: 378 bytes on wire (3024 bits), 378 bytes captured (3024 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: IntelCor_e3:95:22 (a0:c5:89:e3:95:22), Dst: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0)
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 128.119.245.12
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 364
    Identification: 0xcfe1 (53217)
    Flags: 0x4000, Don't fragment
    ...0 0000 0000 0000 = Fragment offset: 0
    Time to live: 128
    Protocol: TCP (6)
    Header checksum: 0xf318 [validation disabled]
    [Header checksum status: Unverified]
    Source: 192.168.0.101
    Destination: 128.119.245.12
Transmission Control Protocol, Src Port: 56874, Dst Port: 80, Seq: 724, Ack: 4685, Len: 324
Hypertext Transfer Protocol
    GET /favicon.ico HTTP/1.1\r\n
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:43.0) Gecko/20100101 Firefox/43.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
    Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/favicon.ico]
    [HTTP request 3/4]
    [Prev request in frame: 220]
    [Response in frame: 324]
    [Next request in frame: 325]
No.     Time           Source                Destination           Protocol Length Info
```

```
No.     Time           Source                Destination           Protocol Length Info
      325 6.568333      192.168.0.101         128.119.245.12        HTTP     378    GET /favicon.ico HTTP/1.1
Frame 325: 378 bytes on wire (3024 bits), 378 bytes captured (3024 bits) on interface \Device\NPF_{2A724C26-154F-4708-A6B9-
B9786A7A462A}, id 0
Ethernet II, Src: IntelCor_e3:95:22 (a0:c5:89:e3:95:22), Dst: Tp-LinkT_92:78:a0 (10:fe:ed:92:78:a0)
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 128.119.245.12
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 364
    Identification: 0xcfe3 (53219)
    Flags: 0x4000, Don't fragment
    ...0 0000 0000 0000 = Fragment offset: 0
    Time to live: 128
    Protocol: TCP (6)
    Header checksum: 0xf316 [validation disabled]
    [Header checksum status: Unverified]
    Source: 192.168.0.101
    Destination: 128.119.245.12
Transmission Control Protocol, Src Port: 56874, Dst Port: 80, Seq: 1048, Ack: 5169, Len: 324
Hypertext Transfer Protocol
    GET /favicon.ico HTTP/1.1\r\n
    Host: gaia.cs.umass.edu\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:43.0) Gecko/20100101 Firefox/43.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
    Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://gaia.cs.umass.edu/favicon.ico]
    [HTTP request 4/4]
    [Prev request in frame: 321]
    [Response in frame: 326]
```

16.   5 запитів GET, цільова адреса 128.119.245.12

17.   Звернувши увагу на час отримання пакетів, можна визначити, що вони були отримані послідовно

Висновки: Під час виконання лабораторної роботи я ознайомилась із протоколом HTTP, проаналізувала деталі роботи цього протоколу, виконала захоплення необхідних пакетів, і,переглянувши їх вміст, відповіла на контрольні запитання.