מסמך תיאור אפליקציית השרת

מגישים:

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במסמך זה נראה את אופן הפעולות והתשובות הצפויות לבקשות הנתמכות ע"י השרת שכתבנו, נראה את ההדפסה בקונסול, הקבצים הרלוונטיים (לדוגמא בבקשת GET) ובבקשות הרלוונטיות נראה כיצד בדקנו את הבקשה בעזרת postman

Options
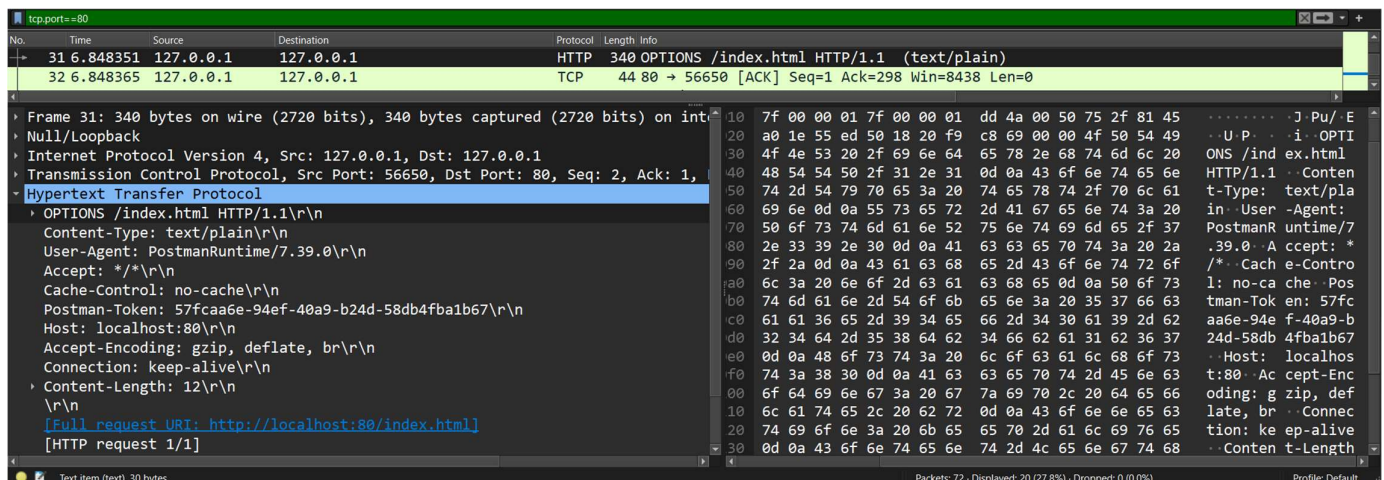
Message in console:

```
HTTP Server: Sent: 149\149 bytes of "HTTP/1.1 204 No Content
Server: HTTP Web Server
Content-Type: text/html
Allow: OPTIONS, GET, HEAD, POST, PUT, DELETE, TRACE
Content-Length: 0
```

Verification in postman:
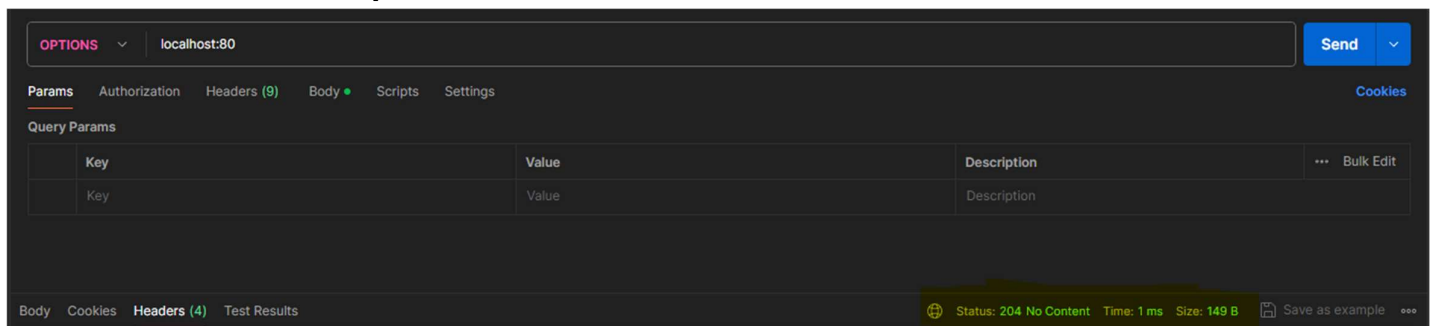
WIRESHARK

Options request:

Options Response:


```
No.    Time       Source        Destination       Protocol  Length  Info
 33 6.848421  127.0.0.1     127.0.0.1             HTTP      193 HTTP/1.1 204 No Content
```

```
Frame 33: 193 bytes on wire (1544 bits), 193 bytes captured (1544 bits) on inter   0000  02 00 00 00 45 00 00 bd  59 a1 40 00 80 06 00 00   ····E··· Y·@·····
Null/Loopback                                                                       0010  7f 00 00 01 7f 00 00 01  00 50 dd 4a a0 1e 55 ed   ········ ·P·J··U·
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1                         0020  75 2f 82 6d 50 18 20 f6  bb 9b 00 00 48 54 54 50   u/·mP· · ····HTTP
Transmission Control Protocol, Src Port: 80, Dst Port: 56650, Seq: 1, Ack: 298,     0030  2f 31 2e 31 20 32 30 34  20 4e 6f 20 43 6f 6e 74   /1.1 204  No Cont
Hypertext Transfer Protocol                                                         0040  65 6e 74 0d 0a 53 65 72  76 65 72 3a 20 48 54 54   ent··Ser ver: HTT
  HTTP/1.1 204 No Content\r\n                                                       0050  50 20 57 65 62 20 53 65  72 76 65 72 0d 0a 43 6f   P Web Se rver··Co
  Server: HTTP Web Server\r\n                                                       0060  6e 74 65 6e 74 2d 54 79  70 65 3a 20 74 65 78 74   ntent-Ty pe: text
  Content-Type: text/html\r\n                                                       0070  2f 68 74 6d 6c 0d 0a 41  6c 6c 6f 77 3a 20 4f 50   /html··A llow: OP
  Allow: OPTIONS, GET, HEAD, POST, PUT, DELETE, TRACE\r\n                           0080  54 49 4f 4e 53 2c 20 47  45 54 2c 20 48 45 41 44   TIONS, G ET, HEAD
  Content-Length: 0\r\n                                                             0090  2c 20 50 4f 53 54 2c 20  50 55 54 2c 20 44 45 4c   , POST,  PUT, DEL
  \r\n                                                                              00a0  45 54 45 2c 20 54 52 41  43 45 0d 0a 43 6f 6e 74   ETE, TRA CE··Cont
  [HTTP response 1/1]                                                               00b0  65 6e 74 2d 4c 65 6e 67  74 68 3a 20 30 0d 0a 0d   ent-Leng th: 0···
  [Time since request: 0.000070000 seconds]                                        00c0  0a                                                 ·
  [Request in frame: 31]
  [Request URI: http://localhost:80/index.html]
```

Get (example on English html file):

Message in console:


```
HTTP Server: Client 127.0.0.1:56791 is connected.
HTTP Server: Sent: 451\451 bytes of "HTTP/1.1 200 OK
Server: HTTP Web Server
Content-Type: text/html
Content-Length: 361
```

Verification in postman:

Ziv and Tamir HTML page!

Task 3 - Computer communication

This is a sample HTML file served by our custom HTTP server.

WIRESHARK

Get request:

```
No.    Time        Source         Destination                Protocol  Length Info
    13 1.173892   127.0.0.1      127.0.0.1                   HTTP      344 GET /index.html?lang=en HTTP/1.1  (text/plain)
    14 1.173905   127.0.0.1      127.0.0.1                   TCP       44 80 → 56791 [ACK] Seq=1 Ack=301 Win=8448 Len=0
```

```
▶ Frame 13: 344 bytes on wire (2752 bits), 344 bytes captured (2752 bits) on interface \Device\NPF_Loopback, id 0
▶ Null/Loopback
▶ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▶ Transmission Control Protocol, Src Port: 56791, Dst Port: 80, Seq: 2, Ack: 1, Len: 300
▼ Hypertext Transfer Protocol
  ▶ GET /index.html?lang=en HTTP/1.1\r\n
    Content-Type: text/plain\r\n
    User-Agent: PostmanRuntime/7.39.0\r\n
    Accept: */*\r\n
    Cache-Control: no-cache\r\n
    Postman-Token: 33348cca-edfc-41b2-9b2e-edc60ba8f76d\r\n
    Host: localhost:80\r\n
    Accept-Encoding: gzip, deflate, br\r\n
    Connection: keep-alive\r\n
  ▶ Content-Length: 12\r\n
    \r\n
    [Full request URI: http://localhost:80/index.html?lang=en]
    [HTTP request 1/1]
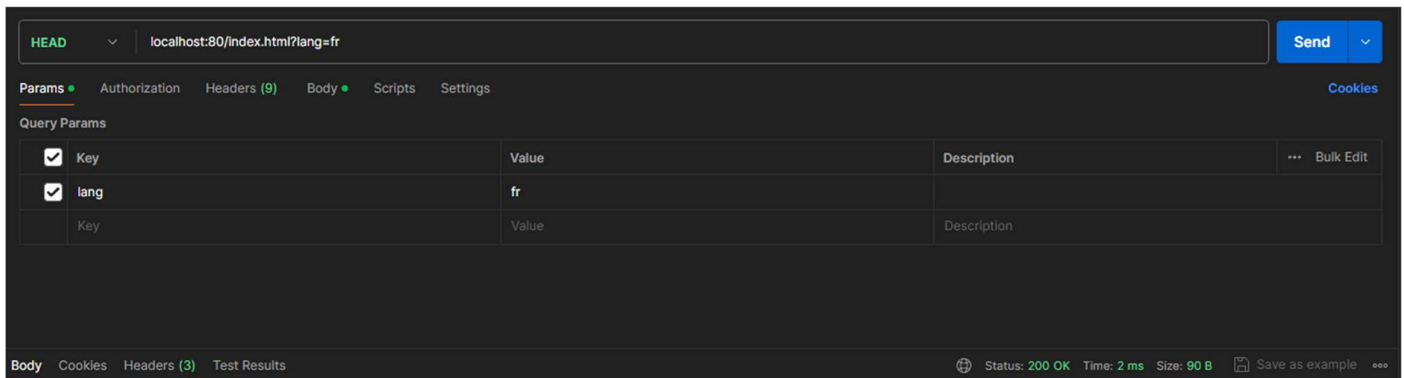```

```
0000  02 00 00 00 45 00 01 54  62 3e 40
0010  7f 00 00 01 7f 00 00 01  dd d7 00
0020  ee ec ab 36 50 18 20 f8  68 54 00
0030  2f 69 6e 64 65 78 2e 68  74 6d 6c
0040  3d 65 6e 20 48 54 54 50  2f 31 2e
0050  6e 74 65 6e 74 2d 54 79  70 65 3a
0060  2f 70 6c 61 69 6e 0d 0a  55 73 65
0070  6e 74 3a 20 50 6f 73 74  6d 61 6e
0080  6d 65 2f 37 2e 33 39 2e  30 0d 0a
0090  74 3a 20 2a 2f 2a 0d 0a  43 61 63
00a0  6e 74 72 6f 6c 3a 20 6e  6f 2d 63
00b0  0a 50 6f 73 74 6d 61 6e  2d 54 6f
00c0  33 33 33 34 38 63 63 61  2d 65 64
00d0  62 32 2d 39 62 32 65 2d  65 64 63
00e0  66 37 36 64 0d 0a 48 6f  73 74 3a
00f0  6c 68 6f 73 74 3a 38 30  0d 0a 41
0100  2d 45 6e 63 6f 64 69 6e  67 3a 20
0110  20 64 65 66 6c 61 74 65  2c 20 62
```

Get response:

```
No.    Time         Source         Destination              Protocol  Length Info
    68 11.454082  127.0.0.1      127.0.0.1                 HTTP      495 HTTP/1.1 200 OK  (text/html)
    69 11.454092  127.0.0.1      127.0.0.1                 TCP       44 56855 → 80 [ACK] Seq=301 Ack=452 Win=2160640 Len=0
```

```
▶ Frame 68: 495 bytes on wire (3960 bits), 495 bytes captured (3960 bits) on interface \Device\NPF_Loopback, id 0
▶ Null/Loopback
▶ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▶ Transmission Control Protocol, Src Port: 80, Dst Port: 56855, Seq: 1, Ack: 301, Len: 451
▼ Hypertext Transfer Protocol
  ▶ HTTP/1.1 200 OK\r\n
    Server: HTTP Web Server\r\n
    Content-Type: text/html\r\n
  ▶ Content-Length: 361\r\n
    \r\n
    [HTTP response 1/1]
    [Time since request: 0.000325000 seconds]
    [Request in frame: 66]
    [Request URI: http://localhost:80/index.html?lang=en]
    File Data: 361 bytes
▶ Line-based text data: text/html (13 lines)
```

```
0000  02 00 00 00 45 00 01 eb  62 67 40
0010  7f 00 00 01 7f 00 00 01  00 50 de
0020  0e 5a ef f3 50 18 20 f9  73 94 00
0030  2f 31 2e 31 20 32 30 30  20 4f 4b
0040  76 65 72 3a 20 48 54 54  50 20 57
0050  72 76 65 72 0d 0a 43 6f  6e 74 65
0060  70 65 3a 20 74 65 78 74  2f 68 74
0070  6f 6e 74 65 6e 74 2d 4c  65 6e 67
0080  36 31 0d 0a 0d 0a 3c 21  44 4f 43
0090  68 74 6d 6c 3e 0d 0a 3c  68 74 6d
00a0  67 3d 22 65 6e 22 3e 0d  0a 3c 68
00b0  0a 3c 6d 65 74 61 20 63  68 61 72
00c0  55 54 46 2d 38 22 3e 0d  0a 3c 6d
00d0  61 6d 65 3d 22 76 69 65  77 70 6f
00e0  6f 6e 74 65 6e 74 3d 22  77 69 64
00f0  76 69 63 65 2d 77 69 64  74 68 2c
0100  69 61 6c 2d 73 63 61 6c  65 3d 31
0110  0a 3c 74 69 74 6c 65 3e  5a 69 76
```

Head (example on French html file):
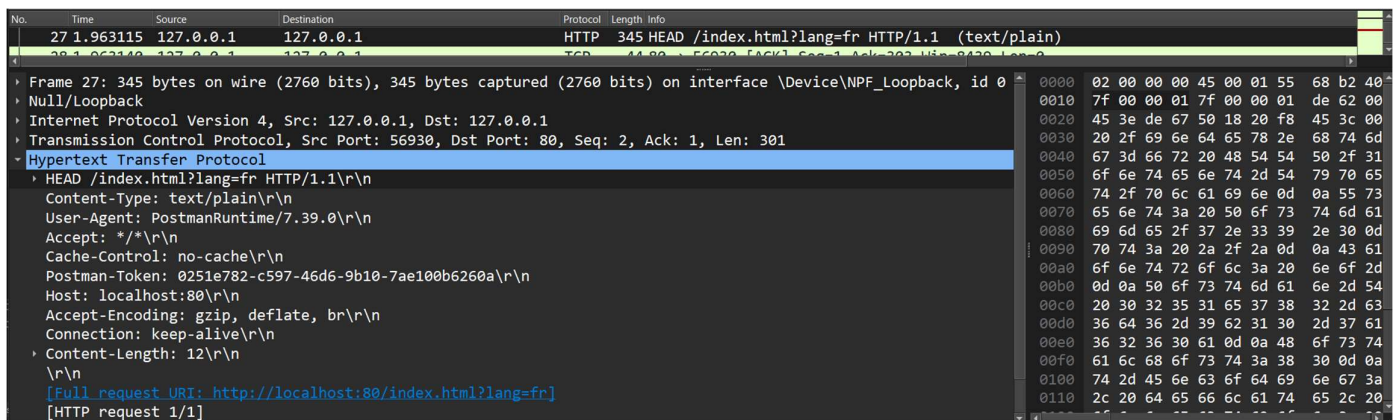
Message in console:

```
HTTP Server: Sent: 90\90 bytes of "HTTP/1.1 200 OK
Server: HTTP Web Server
Content-Type: text/html
Content-Length: 390
```
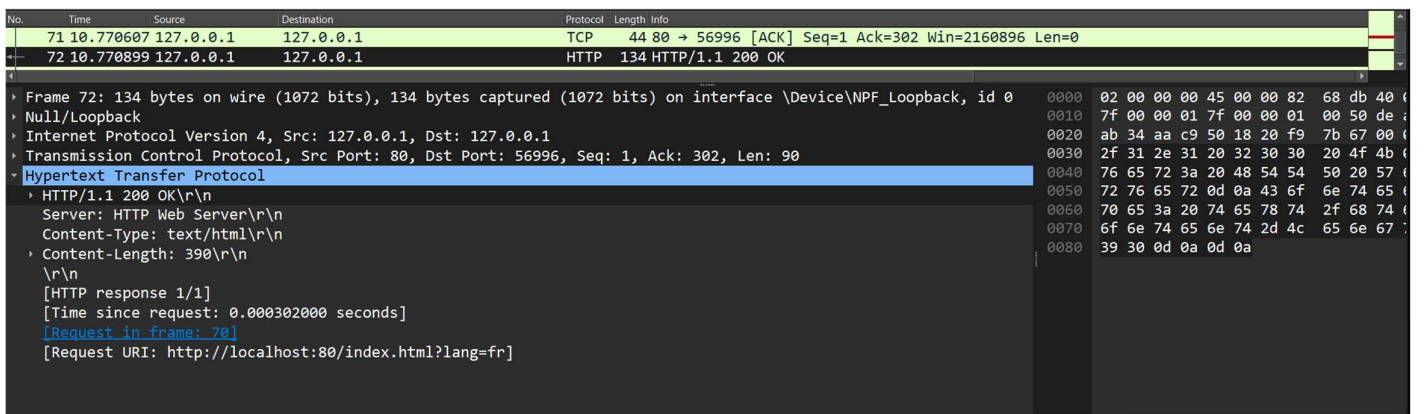
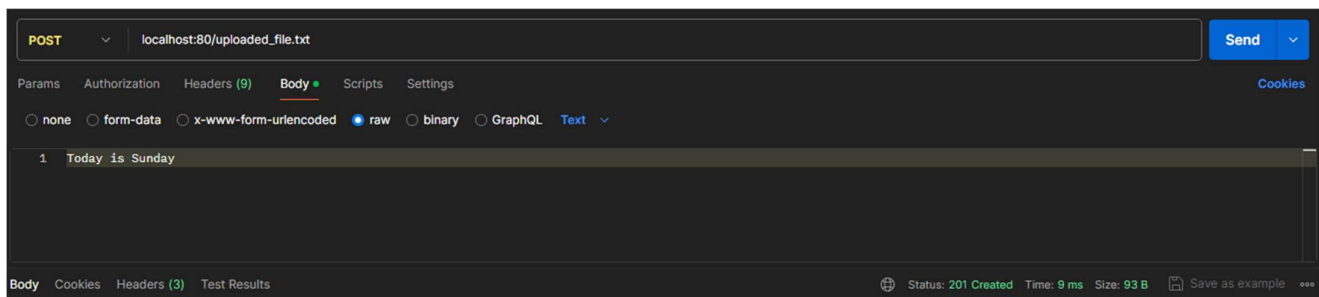## Verification in postman:

WIRESHARK:

Head request:


```
Frame 27: 345 bytes on wire (2760 bits), 345 bytes captured (2760 bits) on interface \Device\NPF_Loopback, id 0
Null/Loopback
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 56930, Dst Port: 80, Seq: 2, Ack: 1, Len: 301
Hypertext Transfer Protocol
    HEAD /index.html?lang=fr HTTP/1.1\r\n
    Content-Type: text/plain\r\n
    User-Agent: PostmanRuntime/7.39.0\r\n
    Accept: */*\r\n
    Cache-Control: no-cache\r\n
    Postman-Token: 0251e782-c597-46d6-9b10-7ae100b6260a\r\n
    Host: localhost:80\r\n
    Accept-Encoding: gzip, deflate, br\r\n
    Connection: keep-alive\r\n
    Content-Length: 12\r\n
    \r\n
    [Full request URI: http://localhost:80/index.html?lang=fr]
    [HTTP request 1/1]
```

Head response:


```
Frame 72: 134 bytes on wire (1072 bits), 134 bytes captured (1072 bits) on interface \Device\NPF_Loopback, id 0
Null/Loopback
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 80, Dst Port: 56996, Seq: 1, Ack: 302, Len: 90
Hypertext Transfer Protocol
    HTTP/1.1 200 OK\r\n
    Server: HTTP Web Server\r\n
    Content-Type: text/html\r\n
    Content-Length: 390\r\n
    \r\n
    [HTTP response 1/1]
    [Time since request: 0.000302000 seconds]
    [Request in frame: 70]
    [Request URI: http://localhost:80/index.html?lang=fr]
```

Post:

Message in console:

```
HTTP Server: Client 127.0.0.1:58226 is connected.
Content length: 15 bytes
File Contents:
Today is Sunday
HTTP Server: Sent: 93\93 bytes of "HTTP/1.1 201 Created
Server: HTTP Web Server
Content-Type: text/html
```

Verification in postman:

POST localhost:80/uploaded_file.txt   Send

Params   Authorization   Headers (9)   Body ●   Scripts   Settings   Cookies

○ none   ○ form-data   ○ x-www-form-urlencoded   ● raw   ○ binary   ○ GraphQL   Text ∨

```
1   Today is Sunday
```

Body   Cookies   Headers (3)   Test Results   Status: 201 Created   Time: 9 ms   Size: 93 B   Save as example

WIRESHARK:

Post request:

No.	Time	Source	Destination	Protocol	Length	Info
86	6.299626	127.0.0.1	127.0.0.1	HTTP	347	POST /uploaded_file.txt HTTP/1.1 (text/plain)
87	6.299644	127.0.0.1	127.0.0.1	TCP	44	80 → 58226 [ACK] Seq=96 Ack=610 Win=8437 Len=0

```
▸ Frame 86: 347 bytes on wire (2776 bits), 347 bytes captured (2776 bits) on interface \Device\NPF_Loopback, id 0
▸ Null/Loopback
▸ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▸ Transmission Control Protocol, Src Port: 58226, Dst Port: 80, Seq: 307, Ack: 96, Len: 303
▾ Hypertext Transfer Protocol
  ▸ POST /uploaded_file.txt HTTP/1.1\r\n
    Content-Type: text/plain\r\n
    User-Agent: PostmanRuntime/7.39.0\r\n
    Accept: */*\r\n
    Cache-Control: no-cache\r\n
    Postman-Token: b4a36682-81f0-4cfe-813f-b3ab73c53077\r\n
    Host: localhost:80\r\n
    Accept-Encoding: gzip, deflate, br\r\n
    Connection: keep-alive\r\n
  ▸ Content-Length: 15\r\n
    \r\n
    [Full request URI: http://localhost:80/uploaded_file.txt]
```

```
0020  3c 1c dc f5 50 18 04 fe  66 44 00
0030  20 2f 75 70 6c 6f 61 64  65 64 5f
0040  74 78 74 20 48 54 54 50  2f 31 2e
0050  6e 74 65 6e 74 2d 54 79  70 65 3a
0060  2f 70 6c 61 69 6e 0d 0a  55 73 65
0070  6e 74 3a 20 50 6f 73 74  6d 61 6e
0080  6d 65 2f 37 2e 33 39 2e  30 0d 0a
0090  74 3a 20 2a 2f 2a 0d 0a  43 61 63
00a0  6e 74 72 6f 6c 3a 20 6e  6f 2d 63
00b0  0a 50 6f 73 74 6d 61 6e  2d 54 6f
00c0  62 34 61 33 36 36 38 32  2d 38 31
00d0  66 65 2d 38 31 33 66 2d  62 33 61
00e0  33 30 37 37 0d 0a 48 6f  73 74 3a
00f0  6c 68 6f 73 74 3a 38 30  0d 0a 41
0100  2d 45 6e 63 6f 64 69 6e  67 3a 20
0110  20 64 65 66 6c 61 74 65  2c 20 62
0120  6e 6e 65 63 74 69 6f 6e  3a 20 6b
```

Post response:


```
No.    Time        Source          Destination          Protocol  Length  Info
       88 6.301310  127.0.0.1       127.0.0.1            HTTP      137     HTTP/1.1 201 Created
       89 6.301324  127.0.0.1       127.0.0.1            TCP       44      58226 → 80 [ACK] Seq=610 Ack=189 Win=1277 Len=0
```

```
Frame 88: 137 bytes on wire (1096 bits), 137 bytes captured (1096 bits) on interface \Device\NPF_Loopback, id 0
Null/Loopback
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 80, Dst Port: 58226, Seq: 96, Ack: 610, Len: 93
Hypertext Transfer Protocol
    HTTP/1.1 201 Created\r\n
    Server: HTTP Web Server\r\n
    Content-Type: text/html\r\n
    Content-Length: 0\r\n
    \r\n
    [HTTP response 2/2]
    [Time since request: 0.001684000 seconds]
    [Prev request in frame: 15]
    [Prev response in frame: 17]
    [Request in frame: 86]
    [Request URI: http://localhost:80/uploaded_file.txt]
```

```
0000  02 00 00 00 45 00 00 85  98 aa 40
0010  7f 00 00 01 7f 00 00 01  00 50 e3
0020  e5 e1 52 3a 50 18 20 f5  36 0c 00
0030  2f 31 2e 31 20 32 30 31  20 43 72
0040  0d 0a 53 65 72 76 65 72  3a 20 48
0050  65 62 20 53 65 72 76 65  72 0d 0a
0060  6e 74 2d 54 79 70 65 3a  20 74 65
0070  6d 6c 0d 0a 43 6f 6e 74  65 6e 74
0080  74 68 3a 20 30 0d 0a 0d  0a
```

Put:

Message in console:

```
HTTP Server: PUT request handled successfully. File created/modified: C:/temp/uploaded_file.txt
HTTP Server: Sent: 88\88 bytes of "HTTP/1.1 200 OK
Server: HTTP Web Server
Content-Type: text/html
Content-Length: 0
```

Verification in postman:


```
PUT      localhost:80/uploaded_file.txt                                            Send

Params  Authorization  Headers (9)  Body ●  Scripts  Settings                      Cookies
○ none  ○ form-data  ○ x-www-form-urlencoded  ● raw  ○ binary  ○ GraphQL  Text ▾

1  aasdasd

Body  Cookies  Headers (3)  Test Results          Status: 200 OK  Time: 1 ms  Size: 88 B   Save as example  ⋯⋯
```
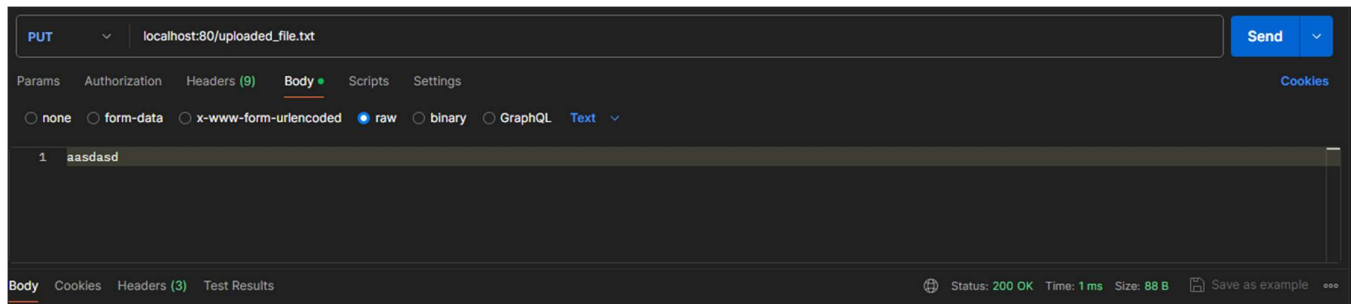
WIRESHARK

Put request:

No.	Time	Source	Destination	Protocol	Length	Info
4	1.010881	127.0.0.1	127.0.0.1	TCP	56	[TCP Keep-Alive ACK] 80 → 57884 [ACK] Seq=1 Ack=2 Win=8441 Len=0 SLE=1 SRE=2
29	1.863690	127.0.0.1	127.0.0.1	HTTP	337	PUT /uploaded_file.txt HTTP/1.1 (text/plain)

```
▶ Transmission Control Protocol, Src Port: 57884, Dst Port: 80, Seq: 2, Ack: 1, Len: 293
▼ Hypertext Transfer Protocol
  ▶ PUT /uploaded_file.txt HTTP/1.1\r\n
    Content-Type: text/plain\r\n
    User-Agent: PostmanRuntime/7.39.0\r\n
    Accept: */*\r\n
    Cache-Control: no-cache\r\n
    Postman-Token: d7e5be3c-32bc-487e-84d7-6df3b7831cd3\r\n
    Host: localhost:80\r\n
    Accept-Encoding: gzip, deflate, br\r\n
    Connection: keep-alive\r\n
  ▶ Content-Length: 7\r\n
    \r\n
    [Full request URI: http://localhost:80/uploaded_file.txt]
    [HTTP request 1/1]
    [Response in frame: 31]
    File Data: 7 bytes
```

```
0020   27 54 3f 98 50 18 20 fa   b6 ec 00
0030   2f 75 70 6c 6f 61 64 65   64 5f 66
0040   78 74 20 48 54 54 50 2f   31 2e 31
0050   74 65 6e 74 2d 54 79 70   65 3a 20
0060   70 6c 61 69 6e 0d 0a 55   73 65 72
0070   74 3a 20 50 6f 73 74 6d   61 6e 52
0080   65 2f 37 2e 33 39 2e 30   0d 0a 41
0090   3a 20 2a 2f 2a 0d 0a 43   61 63 68
00a0   74 72 6f 6c 3a 20 6e 6f   2d 63 61
00b0   50 6f 73 74 6d 61 6e 2d   54 6f 6b
00c0   37 65 35 62 65 33 63 2d   33 32 62
00d0   65 2d 38 34 64 37 2d 36   64 66 33
00e0   63 64 33 0d 0a 48 6f 73   74 3a 20
00f0   68 6f 73 74 3a 38 30 0d   0a 41 63
0100   45 6e 63 6f 64 69 6e 67   3a 20 67
0110   64 65 66 6c 61 74 65 2c   20 62 72
0120   6e 65 63 74 69 6f 6e 3a   20 6b 65
```

Put response:

No.	Time	Source	Destination	Protocol	Length	Info
30	1.863701	127.0.0.1	127.0.0.1	TCP	44	80 → 57884 [ACK] Seq=1 Ack=295 Win=8440 Len=0
31	1.864117	127.0.0.1	127.0.0.1	HTTP	132	HTTP/1.1 200 OK

```
▶ Frame 31: 132 bytes on wire (1056 bits), 132 bytes captured (1056 bits) on interface \Device\NPF_Loopback, id 0
▶ Null/Loopback
▶ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▶ Transmission Control Protocol, Src Port: 80, Dst Port: 57884, Seq: 1, Ack: 295, Len: 88
▼ Hypertext Transfer Protocol
  ▶ HTTP/1.1 200 OK\r\n
    Server: HTTP Web Server\r\n
    Content-Type: text/html\r\n
  ▶ Content-Length: 0\r\n
    \r\n
    [HTTP response 1/1]
    [Time since request: 0.000427000 seconds]
    [Request in frame: 29]
    [Request URI: http://localhost:80/uploaded_file.txt]
```

```
0000   02 00 00 00 45 00 00 80   85 19 40
0010   7f 00 00 01 7f 00 00 01   00 50 e2
0020   dd ce a2 c2 50 18 20 f8   81 55 00
0030   2f 31 2e 31 20 32 30 30   20 4f 4b
0040   76 65 72 3a 20 48 54 54   50 20 57
0050   72 76 65 72 0d 0a 43 6f   6e 74 65
0060   70 65 3a 20 74 65 78 74   2f 68 74
0070   6f 6e 74 65 6e 74 2d 4c   65 6e 67
0080   0d 0a 0d 0a
```

Delete:

Message in console:

```
HTTP Server: Client 127.0.0.1:57998 is connected.
HTTP Server: DELETE request handled successfully. File deleted: C:/temp/uploaded_file.txt
HTTP Server: Sent: 71\71 bytes of "HTTP/1.1 204 No Content
Server: HTTP Web Server
Content-Length: 0
```

Verification in postman:
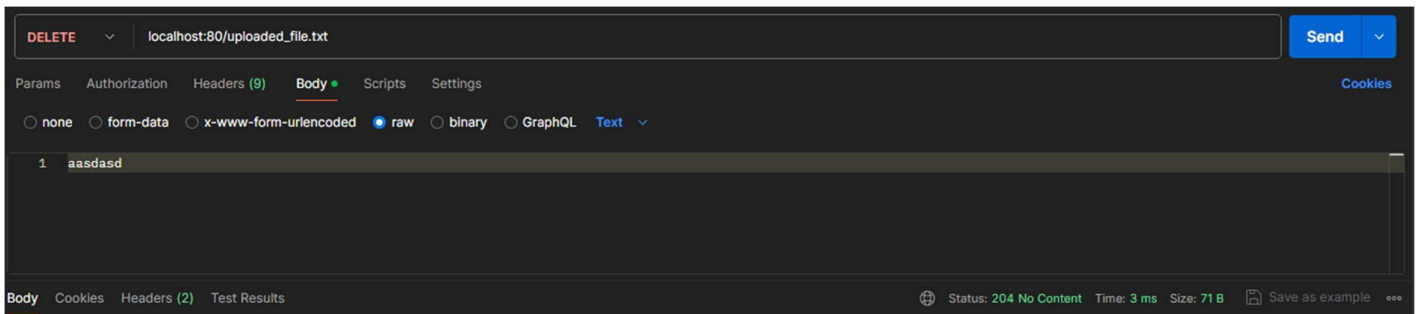
WIRESHARK:

Delete request:

Delete response:

Trace:

Console message:

```
HTTP Server: Client 127.0.0.1:58131 is connected.
HTTP Server: Sent: 389\389 bytes of "HTTP/1.1 200 OK
Server: HTTP Web Server
Content-Type: message/http
Content-Length: 296

TRACE  /uploaded_file.txt HTTP/1.1
Content-Type: text/plain
User-Agent: PostmanRuntime/7.39.0
Accept: */*
Cache-Control: no-cache
Postman-Token: 1c14909e-cee5-46f6-958c-0ca45968bef9
Host: localhost:80
Accept-Encoding: gzip, deflate, br
Connection: keep-alive
Content-Length: 7
```

Verification in postman:

| TRACE ⌄ | localhost:80/uploaded_file.txt | | | Send ⌄ |

Params Authorization Headers (9) Body ● Scripts Settings   Cookies

Query Params

	Key	Value	Description	⋯ Bulk Edit
	Key	Value	Description	

Body Cookies Headers (3) Test Results   🌐 Status: 200 OK Time: 6 ms Size: 389 B 💾 Save as example ⋯

WIRESHARK:

Trace request:

No.	Time	Source	Destination	Protocol	Length	Info
	76 19.243655	127.0.0.1	127.0.0.1	TCP	44	58161 → 80 [ACK] Seq=1 Ack=1 Win=2161152 Len=0
	77 19.243737	127.0.0.1	127.0.0.1	HTTP	339	TRACE /uploaded_file.txt HTTP/1.1 (text/plain)

```
▶ Frame 77: 339 bytes on wire (2712 bits), 339 bytes captured (2712 bits) on interface \Device\NPF_Loopback, id 0
▶ Null/Loopback
▶ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▶ Transmission Control Protocol, Src Port: 58161, Dst Port: 80, Seq: 1, Ack: 1, Len: 295
▼ Hypertext Transfer Protocol
  ▶ TRACE /uploaded_file.txt HTTP/1.1\r\n
    Content-Type: text/plain\r\n
    User-Agent: PostmanRuntime/7.39.0\r\n
    Accept: */*\r\n
    Cache-Control: no-cache\r\n
    Postman-Token: 16bb10a9-d037-42b5-b0c3-50da2b77b005\r\n
    Host: localhost:80\r\n
    Accept-Encoding: gzip, deflate, br\r\n
    Connection: keep-alive\r\n
  ▶ Content-Length: 7\r\n
    \r\n
    [Full request URI: http://localhost:80/uploaded_file.txt]
```

```
0020  29 27 e1 92 50 18 20 fa  cd 08 00
0030  45 20 2f 75 70 6c 6f 61  64 65 64
0040  2e 74 78 74 20 48 54 54  50 2f 31
0050  6f 6e 74 65 6e 74 2d 54  79 70 65
0060  74 2f 70 6c 61 69 6e 0d  0a 55 73
0070  65 6e 74 3a 20 50 6f 73  74 6d 61
0080  69 6d 65 2f 37 2e 33 39  2e 30 0d
0090  70 74 3a 20 2a 2f 2a 0d  0a 43 61
00a0  6f 6e 74 72 6f 6c 3a 20  6e 6f 2d
00b0  0d 0a 50 6f 73 74 6d 61  6e 2d 54
00c0  20 31 36 62 62 31 30 61  39 2d 64
00d0  32 62 35 2d 62 30 63 33  2d 35 30
00e0  37 62 32 30 30 35 0d 0a  48 6f 73 74
00f0  61 6c 68 6f 73 74 3a 38  30 0d 0a
0100  74 2d 45 6e 63 6f 64 69  6e 67 3a
0110  2c 20 64 65 66 6c 61 74  65 2c 20
0120  6f 6e 6e 65 65 63 74 69  6f 6e 3a 20
```

Trace response:

No.	Time	Source	Destination	Protocol	Length	Info
	78 19.243743	127.0.0.1	127.0.0.1	TCP	44	80 → 58161 [ACK] Seq=1 Ack=296 Win=2160896 Len=0
	79 19.243969	127.0.0.1	127.0.0.1	HTTP	433	HTTP/1.1 200 OK (message/http)

```
▶ Frame 79: 433 bytes on wire (3464 bits), 433 bytes captured (3464 bits) on interface \Device\NPF_Loopback, id 0
▶ Null/Loopback
▶ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▶ Transmission Control Protocol, Src Port: 80, Dst Port: 58161, Seq: 1, Ack: 296, Len: 389
▼ Hypertext Transfer Protocol
  ▶ HTTP/1.1 200 OK\r\n
    Server: HTTP Web Server\r\n
    Content-Type: message/http\r\n
  ▶ Content-Length: 296\r\n
    \r\n
    [HTTP response 1/1]
    [Time since request: 0.000232000 seconds]
    [Request in frame: 77]
    [Request URI: http://localhost:80/uploaded_file.txt]
    File Data: 296 bytes
▶ Media Type: message/http
```

```
0020  b4 fc 20 d1 50 18 20 f9  9e 74 00
0030  2f 31 2e 31 20 32 30 30  20 4f 4b
0040  76 65 72 3a 20 48 54 54  50 20 57
0050  72 76 65 72 0d 0a 43 6f  6e 74 65
0060  70 65 3a 20 6d 65 73 73  61 67 65
0070  0d 0a 43 6f 6e 74 65 6e  74 2d 4c
0080  3a 20 32 39 36 0d 0a 0d  0a 54 52
0090  2f 75 70 6c 6f 61 64 65  64 5f 66
00a0  78 74 20 48 54 54 50 2f  31 2e 31
00b0  74 65 6e 74 2d 54 79 70  65 3a 20
00c0  70 6c 61 69 6e 0d 0a 55  73 65 72
00d0  74 3a 20 50 6f 73 74 6d  61 6e 2d
00e0  65 2f 37 2e 33 39 2e 30  0d 0a 41
00f0  3a 20 2a 2f 2a 0d 0a 43  61 63 68
0100  74 72 6f 6c 3a 20 6e 6f  2d 63 61
0110  50 6f 73 74 6d 61 6e 2d  54 6f 6b
0120  36 62 62 31 30 61 39 2d  64 30 33
```

Not Allowed response:

Console:

```
HTTP Server: Client 127.0.0.1:58205 is connected.
HTTP Server: Sent: 177\177 bytes of "HTTP/1.1 405 Method Not Allowed
Server: HTTP Web Server
Content-Type: text/html
Allow: OPTIONS, GET, HEAD, POST, PUT, DELETE, TRACE
Content-Length: 0
Connection: Closed
```

Server response in Wireshark:

No.	Time	Source	Destination	Protocol	Length Info
27	2.423079	127.0.0.1	127.0.0.1	TCP	44 80 → 58213 [ACK] Seq=1 Ack=286 Win=2160896 Len=0
28	2.423190	127.0.0.1	127.0.0.1	HTTP	221 HTTP/1.1 405 Method Not Allowed

```
▸ Frame 28: 221 bytes on wire (1768 bits), 221 bytes captured (1768 bits) on interface \Device\NPF_Loopback, id 0
▸ Null/Loopback
▸ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▸ Transmission Control Protocol, Src Port: 80, Dst Port: 58213, Seq: 1, Ack: 286, Len: 177
▾ Hypertext Transfer Protocol
   ▸ HTTP/1.1 405 Method Not Allowed\r\n
     Server: HTTP Web Server\r\n
     Content-Type: text/html\r\n
     Allow: OPTIONS, GET, HEAD, POST, PUT, DELETE, TRACE\r\n
   ▸ Content-Length: 0\r\n
     Connection: Closed\r\n
     \r\n
     [HTTP response 1/1]
```

```
0000  02 00 00 00 45 00 00 d9  96 a5 40
0010  7f 00 00 01 7f 00 00 01  00 50 e3
0020  51 37 c4 41 50 18 20 f9  1c c8 00
0030  2f 31 2e 31 20 34 30 35  20 4d 65
0040  4e 6f 74 20 41 6c 6c 6f  77 65 64
0050  76 65 72 3a 20 48 54 54  50 20 57
0060  72 76 65 72 0d 0a 43 6f  6e 74 65
0070  70 65 3a 20 74 65 78 74  2f 68 74
0080  6c 6c 6f 77 3a 20 4f 50  54 49 4f
0090  45 54 2c 20 48 45 41 44  2c 20 50
00a0  50 55 54 2c 20 44 45 4c  45 54 45
00b0  43 45 0d 0a 43 6f 6e 74  65 6e 74
00c0  74 68 3a 20 30 0d 0a 43  6f 6e 6e
00d0  6e 3a 20 43 6c 6f 73 65  64 0d 0a
```