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Tutorial Section: T01

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- To run the proxy server in terminal:

```
$python3.6 proxy.py  [logOptions] -replace [optionOne] [optionTwo] srcPort server dstPort
```

Where:

- [logOptions] can be any of the supported logging formats.

- '-replace' command indicates we want to replace patterns in the communication data provided by the client source connection and the remote server.

- [optionOne] is any string we wish to replace in the communication data

- [optionTwo] is the string that is going to replace [optionTwo]

  o For example, '-replace HTTP/1.1 HTTP/1.2' in the arguments when running proxy.py replaces any occurrence of the string HTTP/1.1 in the communication data with the string HTTP/1.2

- 'srcPort' is our client source port

- 'server' is the remote server address

- 'dstPort' is the remote server port

- Supported logging formats:

  o –raw

  o –strip

  o –hex

- o   autoN – where N is any number of bytes

- • Sample outputs of logging formats:

  - o   –raw format output:

```
[rumens-macbook-pro-2:Assignment3 Rumen$ python3.6 proxy.py -raw 2011 "www.ucalgary.ca" 80
Port logger running: srcPort=2011 host=www.ucalgary.ca dstPort=80
New connection: 1900-01-01 16:48:15, from ('127.0.0.1', 49635)
Port logger running: srcPort=2011 host=www.ucalgary.ca dstPort=80
New connection: 1900-01-01 16:48:43, from ('127.0.0.1', 49652)
---> GET / HTTP/1.1

---> Host: localhost:2011

---> Connection: keep-alive

---> User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_11_3) AppleWebKit/537.36 (KHTML, like Ge
cko) Chrome/61.0.3163.100 Safari/537.36

---> Upgrade-Insecure-Requests: 1

---> Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8

---> Accept-Encoding: gzip, deflate, br

---> Accept-Language: en-US,en;q=0.8,es;q=0.6,bg;q=0.4

--->

--->

Port logger running: srcPort=2011 host=www.ucalgary.ca dstPort=80
New connection: 1900-01-01 16:48:43, from ('127.0.0.1', 49654)
<--- HTTP/1.1 404 Not Found

<--- Date: Sun, 29 Oct 2017 22:48:43 GMT

<--- Server: Apache/2.2.15 (Red Hat)

<--- Last-Modified: Thu, 15 Oct 2015 18:40:25 GMT

<--- ETag: "11a267f-349e-522290321e11b"

<--- Accept-Ranges: bytes

<--- Content-Length: 13470

<--- Connection: close

<--- Content-Type: text/html; charset=UTF-8

<---

<--- <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"

<---     "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
```

o   –strip format output:

```
[rumens-macbook-pro-2:Assignment3 Rumen$ python3.6 proxy.py -strip 2012 "www.ucalgary.ca" 80          ]
Port logger running: srcPort=2012 host=www.ucalgary.ca dstPort=80
New connection: 1900-01-01 17:00:16, from ('127.0.0.1', 49714)
---> This is me sending non-printable characters ..................

---> .

<--- HTTP/1.1 400 Bad Request..Date: Sun, 29 Oct 2017 23:01:22 GMT..Server: Apache/2.2.15 (Red Hat)
..Content-Length: 308..Connection: close..Content-Type: text/html; charset=iso-8859-1....<!DOCTYPE
HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">.<html><head>.<title>400 Bad Request</title>.</head><body>.
<h1>Bad Request</h1>.<p>Your browser sent a request that this server could not understand.<br />.</
p>.<hr>.<address>Apache/2.2.15 (Red Hat) Server at www.ucalgary.ca Port 80</address>.</body></html>
.

No data provided. Connection closed.
```

Note: For the server response, there is only one '<---' since strip replaces all \n characters with dots and the arrows rely on newlines.

o   –hex format output:

```
[rumens-macbook-pro-2:Assignment3 Rumen$ python3.6 proxy.py -hex 2013 "www.ucalgary.ca" 80
Port logger running: srcPort=2013 host=www.ucalgary.ca dstPort=80
New connection: 1900-01-01 17:06:47, from ('127.0.0.1', 49744)
---> 00000000    54 68 69 73 20 69 73 20  6d 65 20 67 69 76 69 6e    |This is me givin|

---> 00000010    67 20 73 6f 6d 65 20 63  6f 6f 6c 20 74 65 78 74    |g some cool text|

---> 00000020    20 74 6f 20 74 75 72 6e  20 69 6e 74 6f 20 68 65    | to turn into he|

---> 00000030    78 2c 20 66 6f 6c 6c 6f  77 65 64 20 62 79 20 61    |x, followed by a|

---> 00000040    20 6e 65 77 6c 69 6e 6e  65 a                       | newlinne.|

---> 00000000    a                                                   |.|

<--- 00000000    48 54 54 50 2f 31 2e 31  20 34 30 30 20 42 61 64    |HTTP/1.1 400 Bad|

<--- 00000010    20 52 65 71 75 65 73 74  d a 44 61 74 65 3a 20      | Request..Date: |

<--- 00000020    53 75 6e 2c 20 32 39 20  4f 63 74 20 32 30 31 37    |Sun, 29 Oct 2017|

<--- 00000030    20 32 33 3a 30 37 3a 31  34 20 47 4d 54 d a 53      | 23:07:14 GMT..S|

<--- 00000040    65 72 76 65 72 3a 20 41  70 61 63 68 65 2f 32 2e    |erver: Apache/2.|

<--- 00000050    32 2e 31 35 20 28 52 65  64 20 48 61 74 29 d a      |2.15 (Red Hat)..|

<--- 00000060    43 6f 6e 74 65 6e 74 2d  4c 65 6e 67 74 68 3a 20    |Content-Length: |

<--- 00000070    33 30 38 d a 43 6f 6e    6e 65 63 74 69 6f 6e 3a    |308..Connection:|

<--- 00000080    20 63 6c 6f 73 65 d a    43 6f 6e 74 65 6e 74 2d    | close..Content-|
```

- autoN format output:

```
[rumens-macbook-pro-2:Assignment3 Rumen$ nc localhost 2013
Lets give ucalgary a bad request again. Here are some tabs, newlines and slashes
first.          \\\\     \          \          \          \
```

Note: This is what we give on the client source netcat connection to the proxy server.

```
rumens-macbook-pro-2:Assignment3 Rumen$ python3.6 proxy.py -auto23 2013 "www.ucalgary.ca" 80
Port logger running: srcPort=2013 host=www.ucalgary.ca dstPort=80
New connection: 1900-01-01 17:12:20, from ('127.0.0.1', 49747)
---> Lets give ucalgary a ba

---> d request again. Here a

---> re some tabs, newlines

---> and slashes firstes fir

---> st. \t\t\\\\\\\\\t\\\t\\\t\\\t\\\n

---> \n

<--- HTTP/1.1 400 Bad Reques

<--- t\r\nDate: Sun, 29 Oct 20

<--- 17 23:13:35 GMT\r\nServer

<--- : Apache/2.2.15 (Red Ha

<--- t)\r\nContent-Length: 308

<--- \r\nConnection: close\r\nCo
```

Note: This is the proxy server logging for auto23 where the tabs slashes and newlines are displayed accordingly