UNIVERSITAS INDONESIA Veritas, Probitas, Iustitia FAKULTAS ILMU KOMPUTER	
Worksheet Jaringan Komunikasi Data (CSIM603154)– 2020-2021 Gasal	Week : 3 Topic : Applciation Layer: HTTP persistent with Telnet
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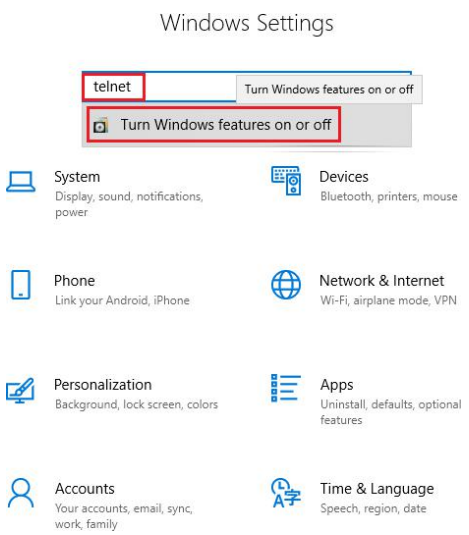
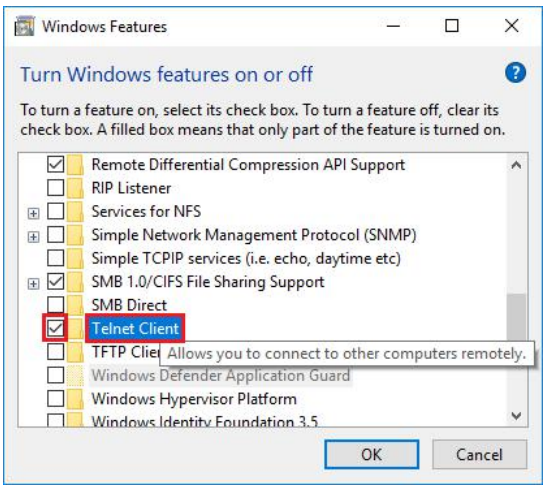
A. Pre-requisite

You have to have a Telnet program in your computer. NOTE:

- For Linux users, you can usually find Telnet already installed in your system. Otherwise, you need to install it (the command varies depending on the Linux distribution).
    - NOTE: This guide uses telnet in Linux Lubuntu.
- For Windows users, you need to enable telnet client. Go to Windows Settings > search for telnet
  > go to "Turn Windows features on or off" > tick the "Telnet Client" to enable it.
    - NOTE: in my Windows, I can't see the characters as I typed the command inside the telnet (after the telnet connection is executed).





- For MacOS users, Telnet is still part of the system for the older version of MacOS.
    - But it has been removed in the modern versions, e.g. Mojave & High Sierra. So you need to install it first (search for the instructions in the internet as I am not a Mac user).

B. Run Wireshark

1. Start wireshark and then start packet capture.

C. Running Telnet

1. Open the terminal (command prompt in Windows) and then type:

   `telnet gaia.cs.umass.edu 80`. (NOTE: gaia.cs.umass.edu is the host and 80 the port where HTTP service runs).

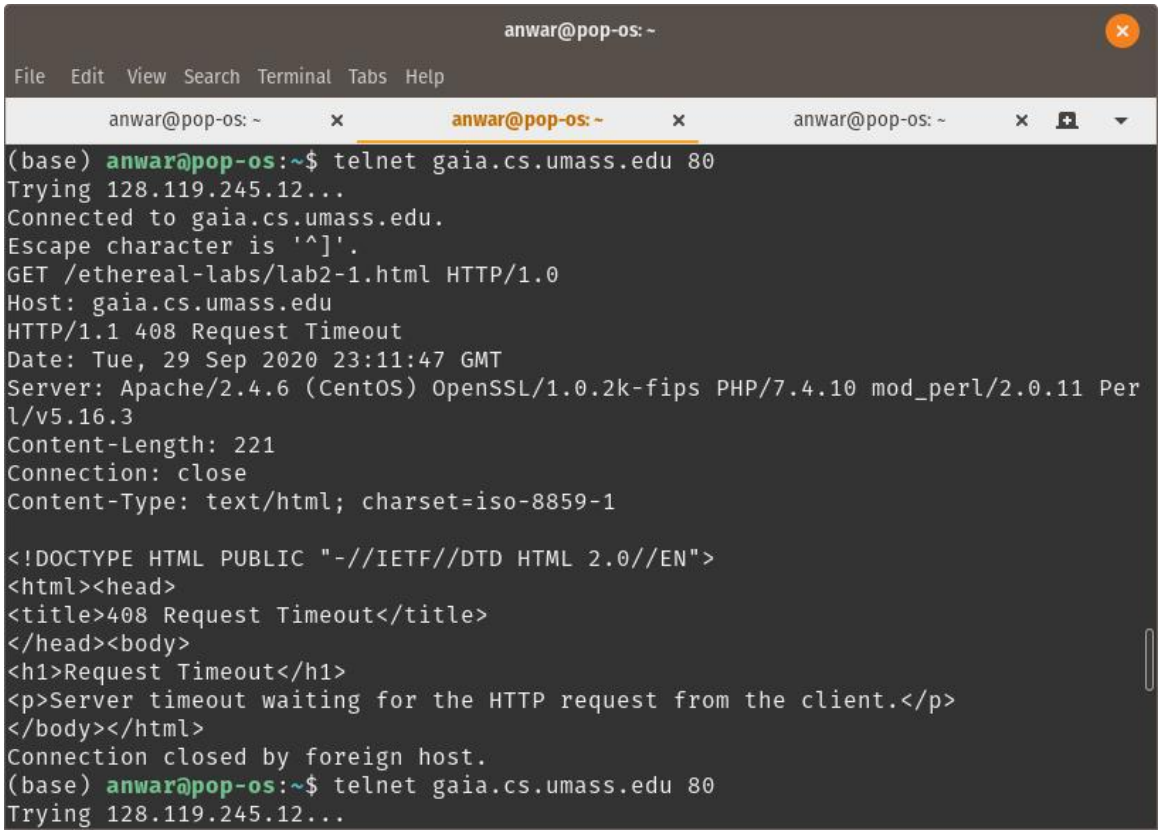
   a. It'll take some time to establish TCP connection

2. After successful telnet connection, type the following:

   a. `GET /ethereal-labs/lab2-1.html HTTP/1.0` [Enter]

   b. `Host: gaia.cs.umass.edu` [Enter 2x]

3. You will see response from the server and then the connection will be immediately closed:

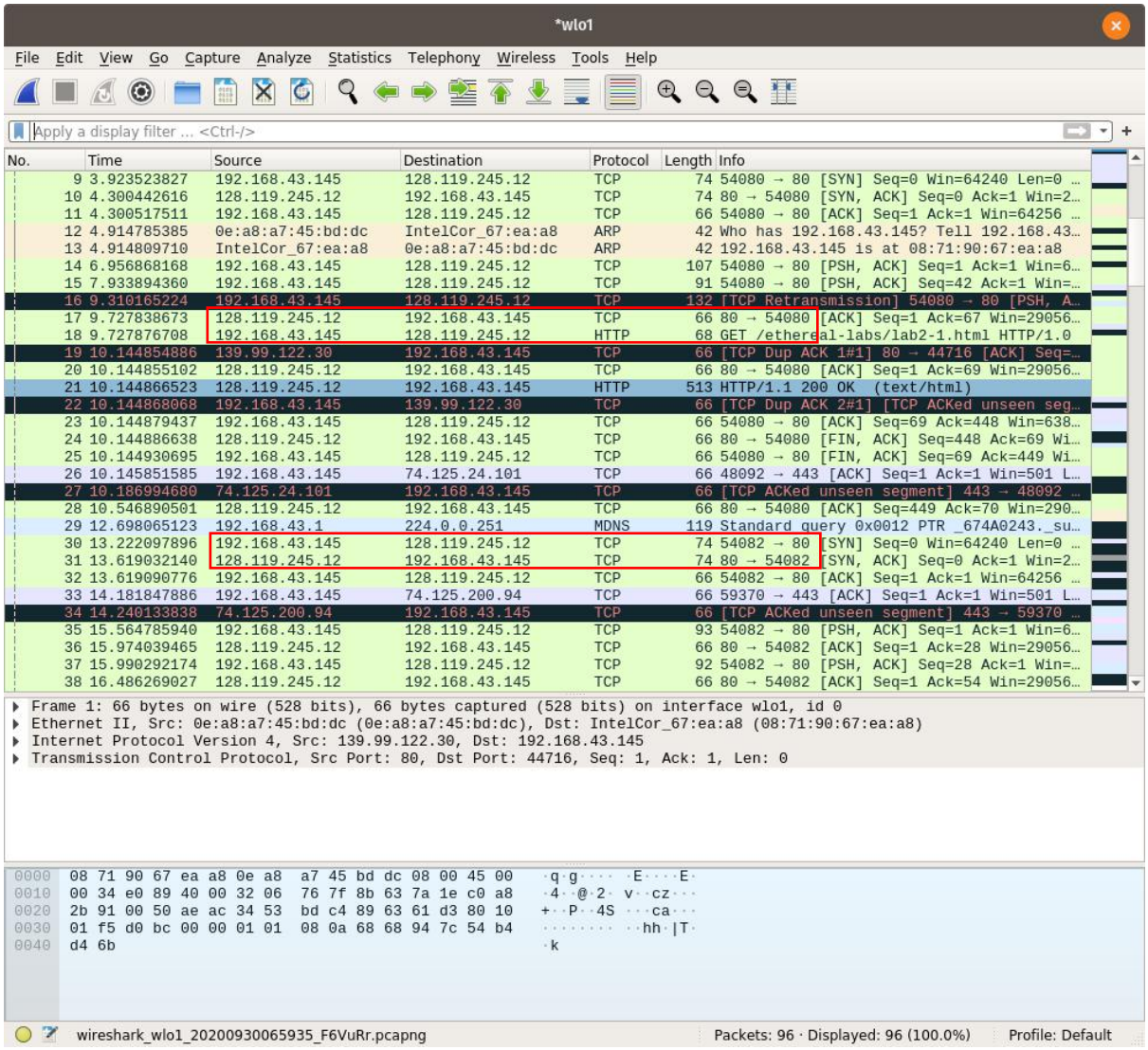


4. Create another telnet connection to gaia.cs.umass.edu web server (as in point 1)
5. After successful telnet connection, type the following:
    a. `GET /favicon.ico HTTP/1.0` [Enter]
    b. `Host: gaia.cs.umass.edu` [Enter 2x]
6. Again you will see the response from the server and closing of the connection:

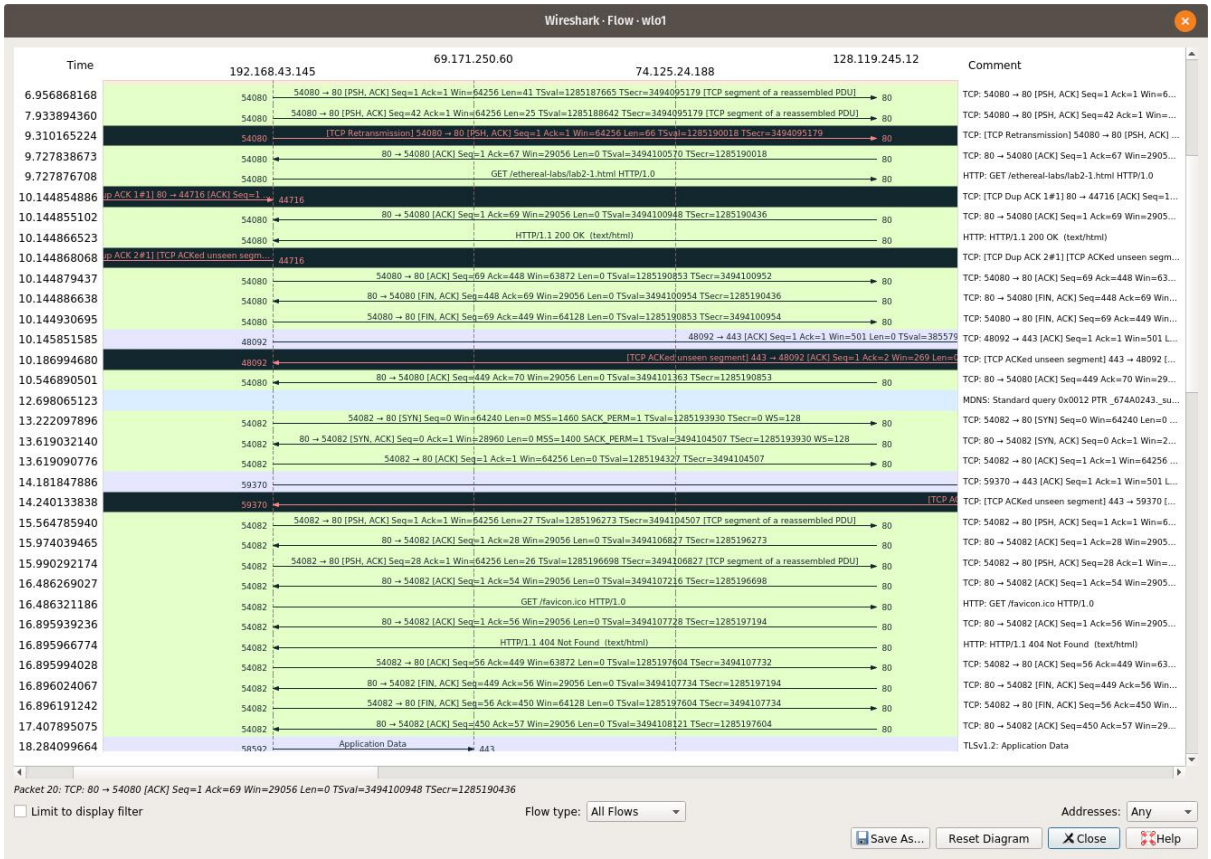
```
anwar@pop-os: ~
File  Edit  View  Search  Terminal  Tabs  Help
anwar@pop-os: ~   anwar@pop-os: ~   anwar@pop-os: ~
(base) anwar@pop-os:~$ telnet gaia.cs.umass.edu 80
Trying 128.119.245.12...
Connected to gaia.cs.umass.edu.
Escape character is '^]'.

GET /favicon.ico HTTP/1.0
GET /ethereal-labs/lab2-1.html HTTP/1.0

HTTP/1.1 400 Bad Request
Date: Tue, 29 Sep 2020 23:17:27 GMT
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.10 mod_perl/2.0.11 Per
l/v5.16.3
Content-Length: 226
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>
</body></html>
```

D. Analyze Wireshark packet capture

1. Stop Wireshark packet capture
2. Type "tcp.port == x || tcp.port == y" in the display-filter window (where **x** is the port number of your end device that is involved in the first telnet connection, and **y** is the port number of your end device that is involved in the second telnet connection), so that only TCP messages in both telnet session previously performed will be displayed.
    a. You can check the port numbers that are involved in the communication with the gaia.cs.umass.edu web server (IP Address 128.119.245.12)
    b. In the example below, the port number of the client device in the first connection, **x** = 54080, while in the second connection, **y** = 54082.



3. Open the flow graph and then tick the "Limit to display filter" option. You can ignore the TCP retransmission message and the TCP message with "**PSH**" flag.
    a. Please compare with the pattern of HTTP non-persistent message flow in the slide!
    b. Notice the TCP message with flag "**SYN**" and "**FIN**". (You will find out the detail about them in the next chapter).



E. Your Task

1. Conduct steps A-D above.

2. Try an experiment to access another website by using HTTP, access at least two different links to the website menu/sub-menu/assets. Identify the request line, status line, header lines, dan body/data from the captured packet on wireshark

3. Screenshot your entire experiment and save it in a .pdf file.

4. Answer question below comprehensively (200 words/more) on your pdf file along with task no.3

   a. Explain the flow of HTTP persistent in your experiment

   b. Explain the differences of HTTP persistent and HTTP non persistent

F. Submission

1. Wireshark files of your experiment

2. Pdf file of your screenshot and analysis

   * zip the files into one .zip file then upload it to scele.

Reference : Tutorial Wireshark Jarkom A/B/C Gasal 2020_2021