Interoperability Test

Name: 여주안 Student ID number: 2017027265

Write down information of your team mates.

Name	Student ID number
여주안	2017027265
A	-
B	-
C	-

1. Introduction

4명의 조원들이 함께 웹 서버와 웹 클라이언트 프로그램을 테스트하였다. 상호운용성 테스트는 다른 기기에 있는 웹 서버/웹 클라이언트를 연결하는 실험이다. 웹 클라이언트는 GET, POST 방식으로 HTTP 요청을 보내고 서버는 이를 처리하여 올바른 응답을 반환한다. 네트워크 통신의 내용은 WireShark로 캡쳐하여 확인한다.

2. Test Procedure 1

A. Write down the name of person that you tested with

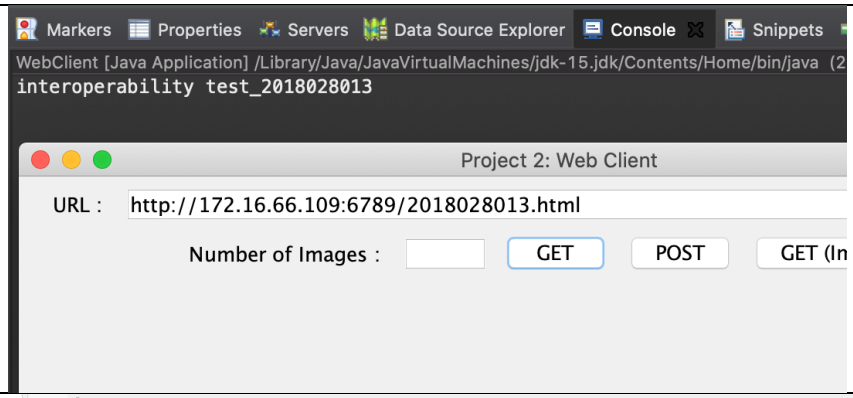
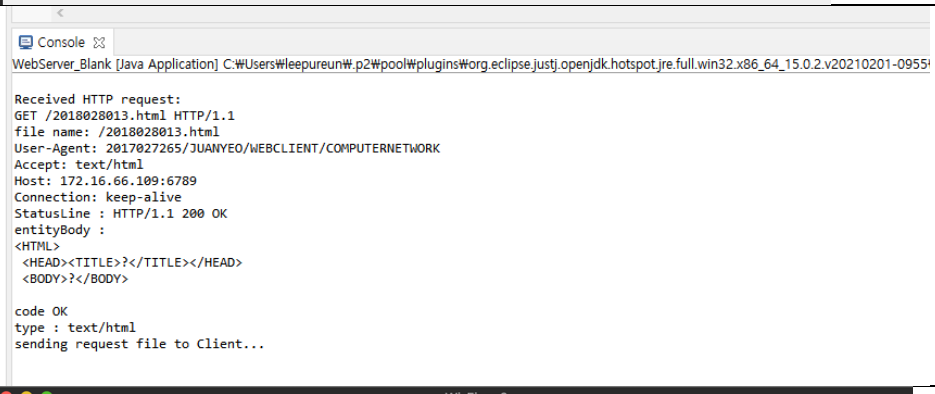
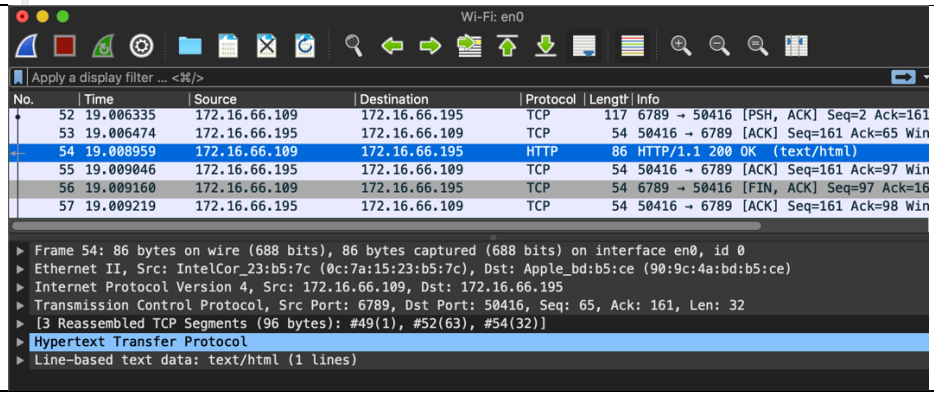
Web server owner's name	B
Web client owner's name	여주안

B. Run wireshark

C. Send GET Method to Web Server of your group member through your client

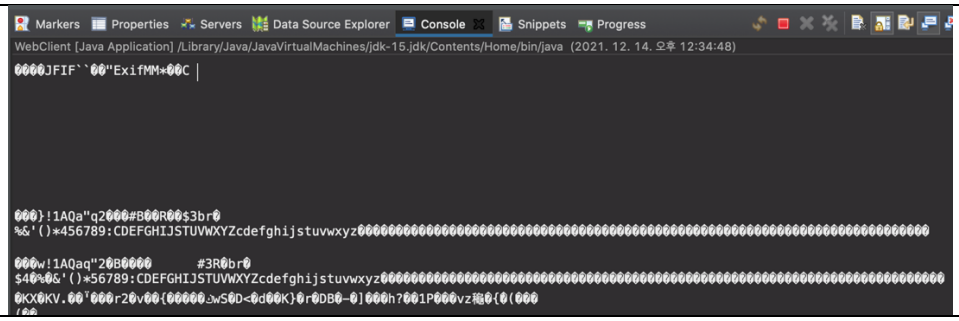
i. Get studentID.html

(e.g. GET http://127.0.0.1:8080/studentId.html)

Result Screenshot (Client)	
Result Screenshot (Server)	
Wireshark Screenshot	

ii. Get image.jpg

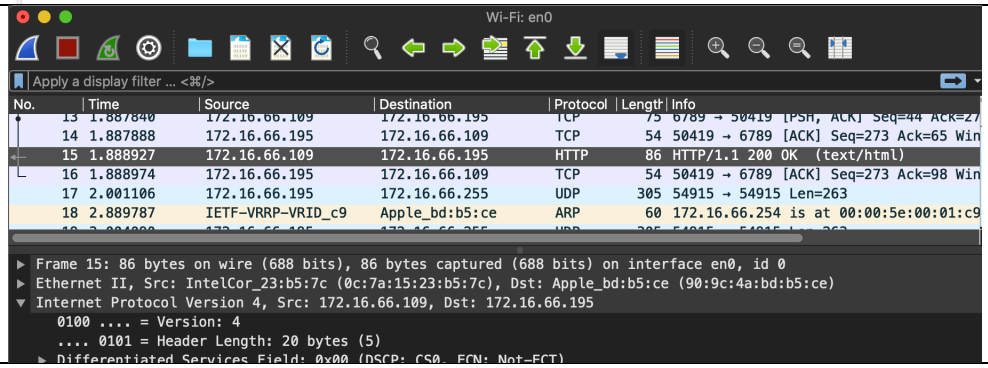
(e.g. GET http://127.0.0.1:8080/image.jpg)

Result Screenshot (Client)	

Result Screenshot (Server)	Console WebServer_Blank [Java Application] C:₩Users₩leepureun₩.p2₩pool₩plugins₩org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_15.0.2.v202102 Pragma: no-cache Host: 172.16.66.109:6789 Connection: keep-alive Content-Length: 11 StatusLine : HTTP/1.1 200 OK entityBody : <HTML> <HEAD><TITLE>?</TITLE></HEAD> <BODY>?</BODY> code OK type : text/html sending request file to Client... Received HTTP request: GET /image.jpg HTTP/1.1 file name: /image.jpg User-Agent: 2017027265/JUANYEO/WEBCLIENT/COMPUTERNETWORK Accept: text/html Host: 172.16.66.109:6789 Connection: keep-alive StatusLine : HTTP/1.1 200 OK entityBody : <HTML> <HEAD><TITLE>?</TITLE></HEAD> <BODY>?</BODY> code OK type : image/jpeg sending request file to Client...
Wireshark Screenshot	Wi-Fi: en0 Apply a display filter ... <⌘/> No. Time Source Destination Protocol Length Info 24 2.560417 172.16.66.195 172.16.66.109 TCP 54 50430 → 6789 [ACK] Seq=1 Ack=1 Win=26 25 2.561480 172.16.66.195 172.16.66.109 HTTP 208 GET /image.jpg HTTP/1.1 26 2.590829 172.16.66.109 172.16.66.195 TCP 55 6789 → 50430 [PSH, ACK] Seq=1 Ack=155 27 2.590922 172.16.66.109 172.16.66.195 HTTP 900 HTTP/1.1 200 OK (JPEG JFIF image) 28 2.591024 172.16.66.195 172.16.66.109 TCP 54 50430 → 6789 [ACK] Seq=155 Ack=2 Win= ▶ Frame 25: 208 bytes on wire (1664 bits), 208 bytes captured (1664 bits) on interface en0, id 0 ▶ Ethernet II, Src: Apple_bd:b5:ce (90:9c:4a:bd:b5:ce), Dst: IntelCor_23:b5:7c (0c:7a:15:23:b5:7c) ▼ Internet Protocol Version 4, Src: 172.16.66.195, Dst: 172.16.66.109 0100 .... = Version: 4 .... 0101 = Header Length: 20 bytes (5) ▶ Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT) Total Length: 194

D. Send POST Method to Web Server of group member through your client (e.g. POST http://127.0.0.1:8080/studentId.html)

Result Screenshot (Client)	Markers Properties Servers Data Source Explorer Console Snippets Progress WebClient [Java Application] /Library/Java/JavaVirtualMachines/jdk-15.jdk/Contents/Home/bin/java (2021. 12. 14. 오후 12:34 interoperability test_2018028013 POST interoperability test_2018028013 Project 2: Web Client URL : http://172.16.66.109:6789/2018028013.html Number of Images : GET POST GET (Image)

Result Screenshot (Server)	
Wireshark Screenshot	

3. Test Procedure

   A. Write down the name of person that you tested with

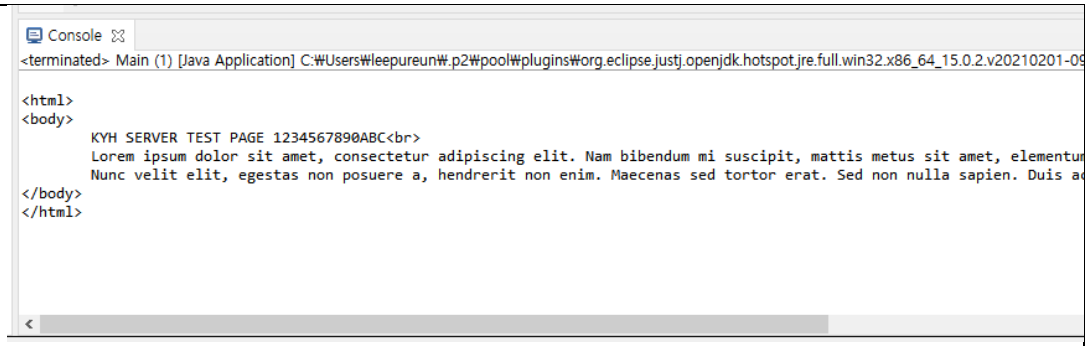
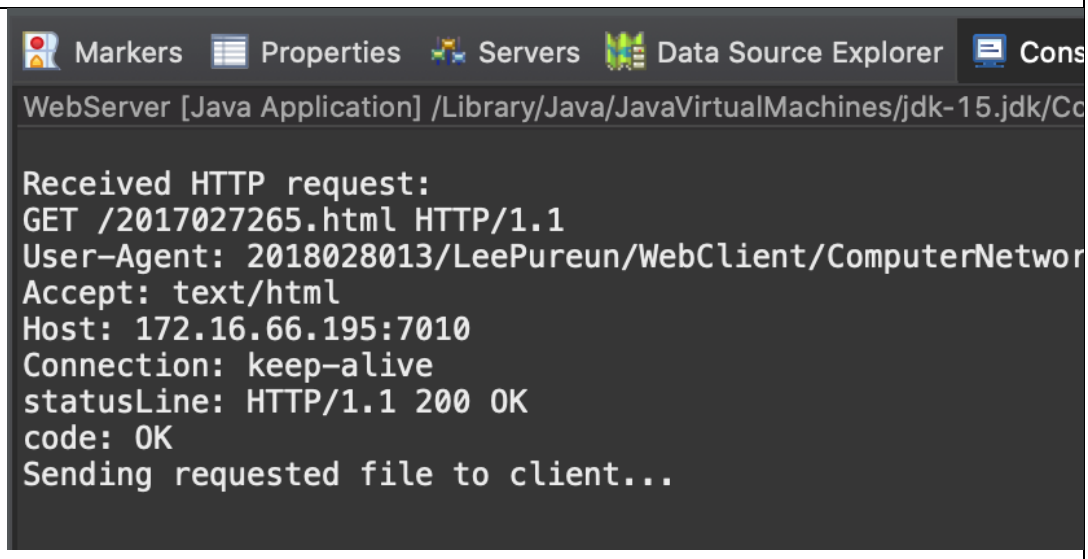
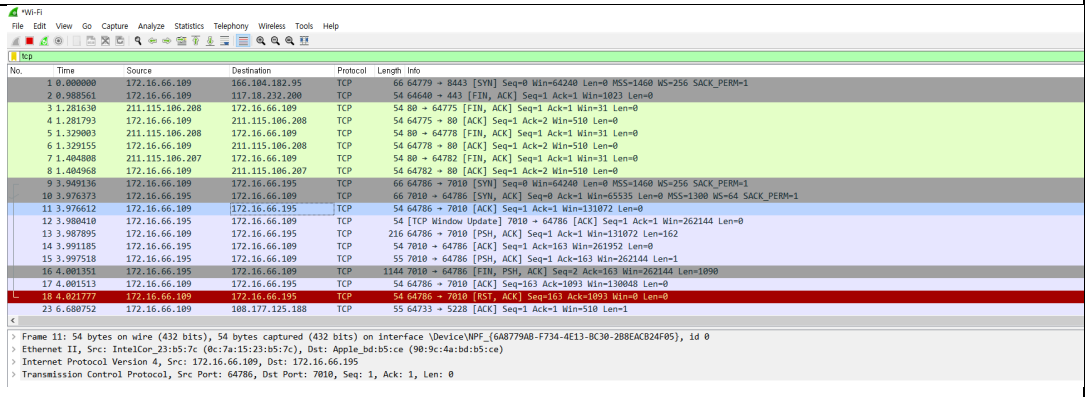
Web server owner's name	여주안
Web client owner's name	B

   B. Run wireshark

   C. Send GET Method to Web Server of your group member through your client

      i. Get studentID.html

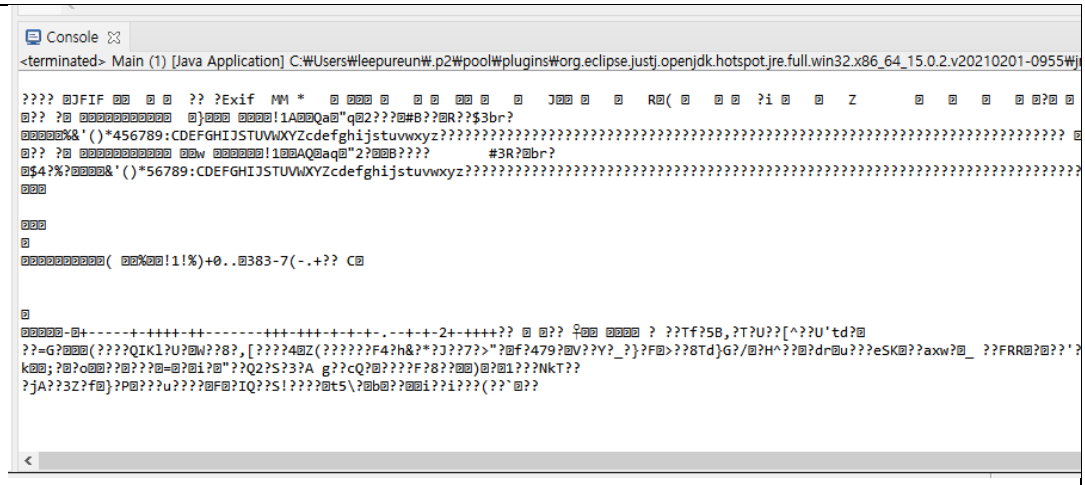
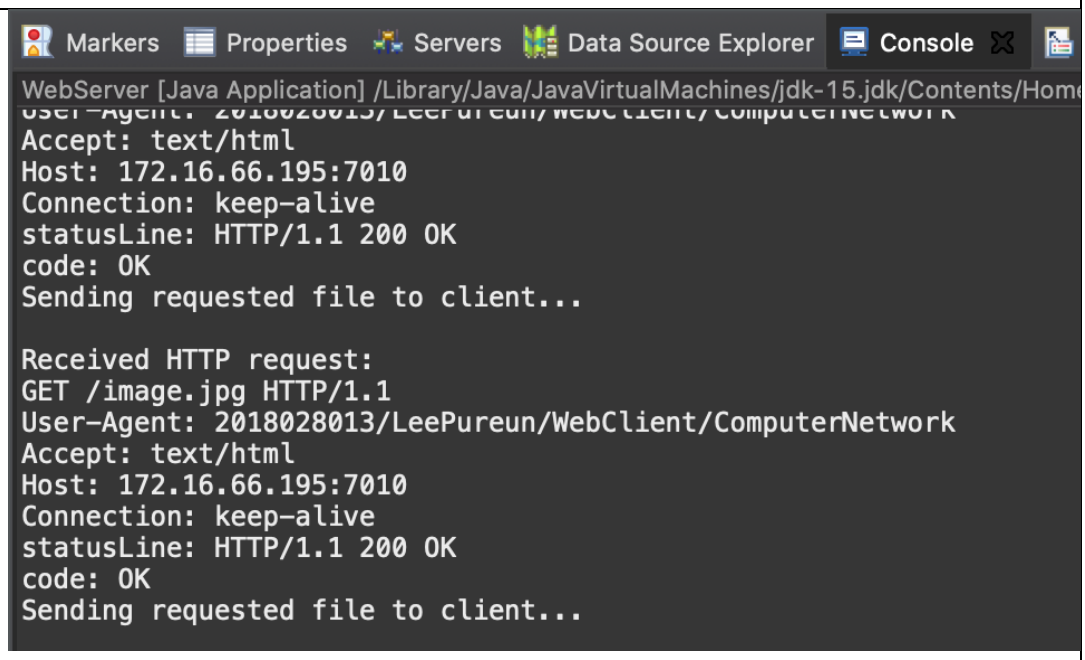
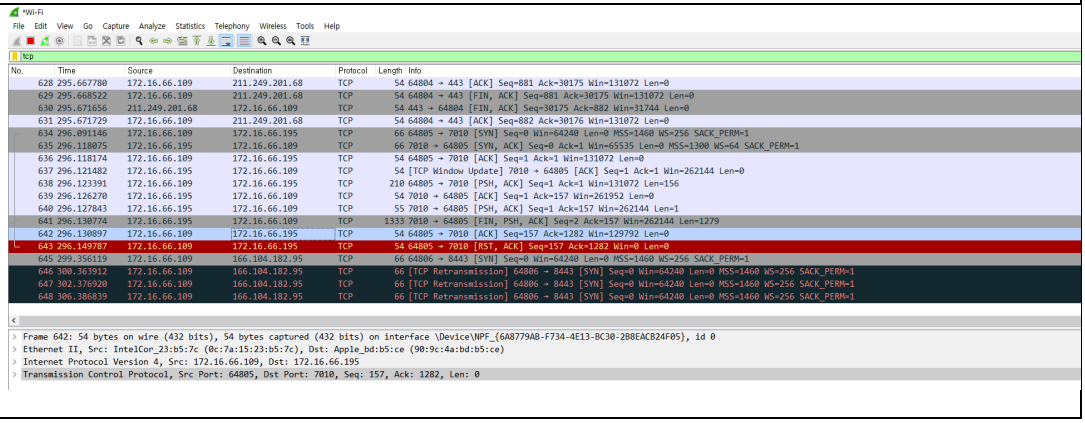
      GET http://172.16.66.195:7010/2017027265.html

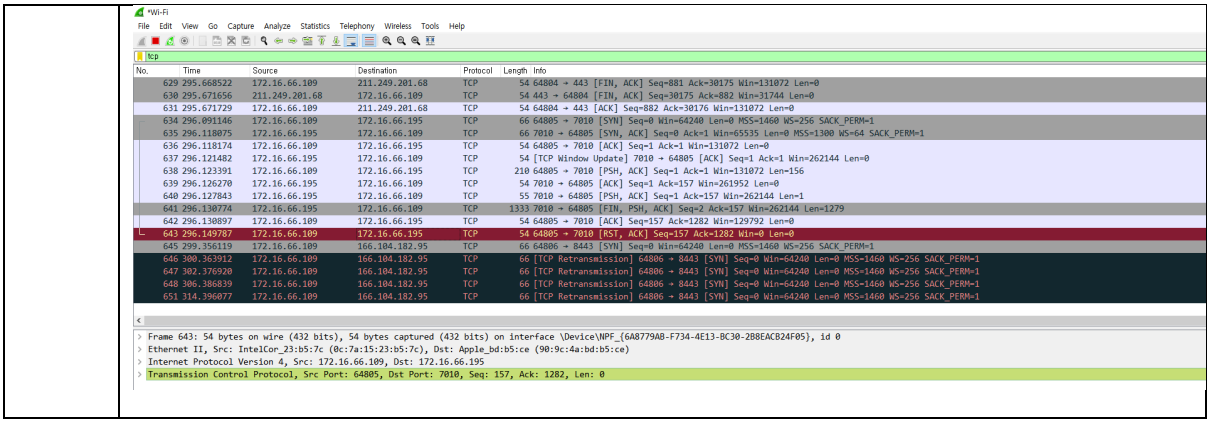
Result Screenshot (Client)	
Result Screenshot (Server)	
Wireshark Screenshot	

ii. Get image.jpg

(e.g. GET http://127.0.0.1:8080/image.jpg)

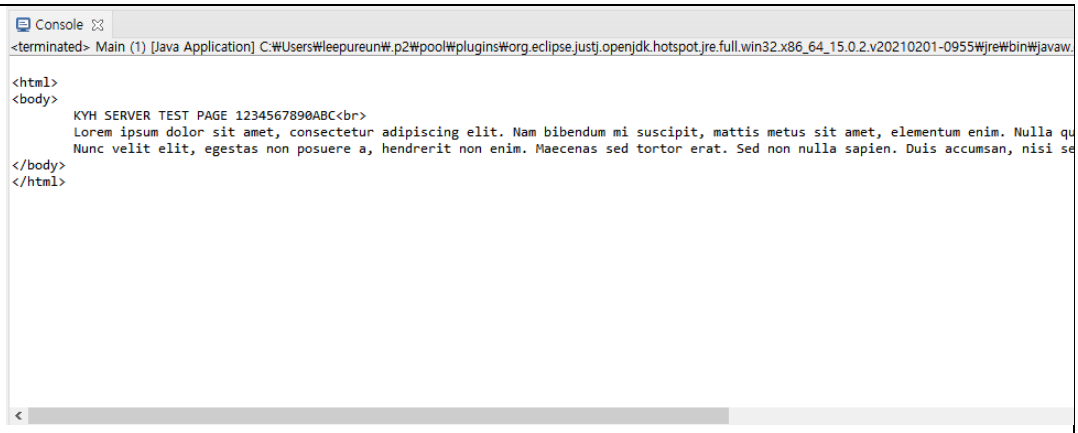
GET http://172.16.66.195:7010/image.jpg

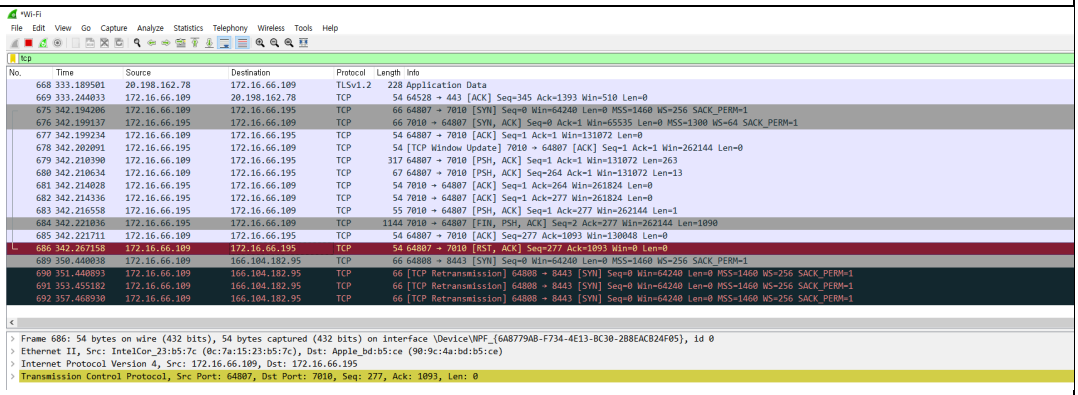
Result Screenshot (Client)	
Result Screenshot (Server)	
Wireshark Screenshot	



D. Send POST Method to Web Server of group member through your client (e.g. POST http://127.0.0.1:8080/studentId.html)

POST http://172.16.66.195:7010/2017027265.html

Result Screenshot (Client)	

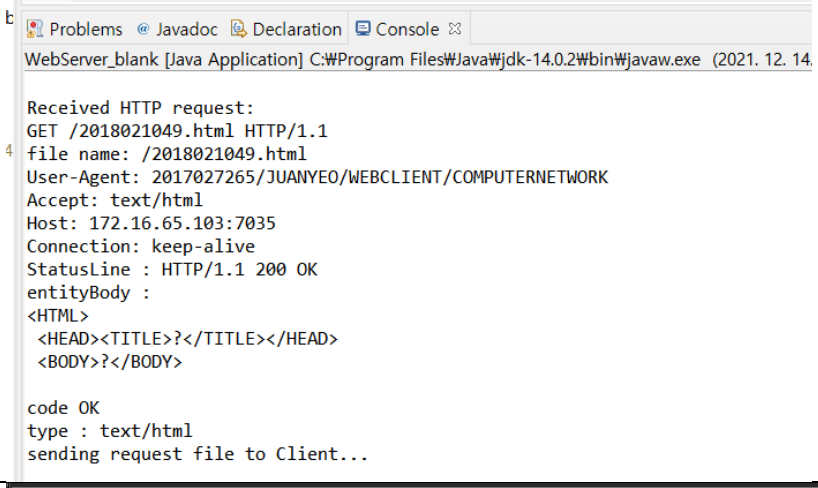
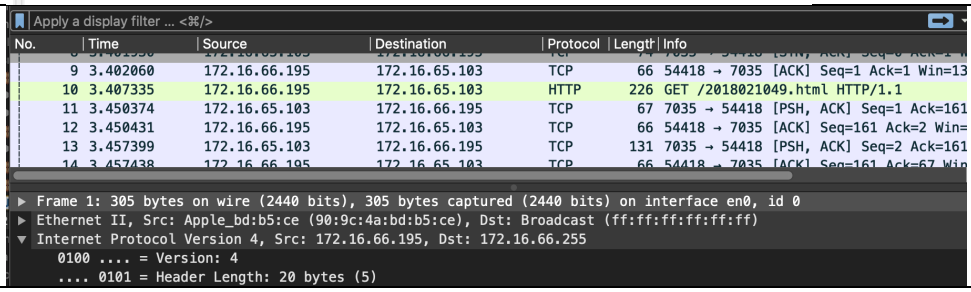
Result Screenshot (Server)	Markers Properties Servers Data Source Explorer Console WebServer [Java Application] /Library/Java/JavaVirtualMachines/jdk-15.jdk/Contents/H code: OK Sending requested file to client... Received HTTP request: POST /2017027265.html HTTP/1.1 Content-Type: text/xml;charset=UTF-8 User-Agent: 2018028013/LeePureun/WebClient/ComputerNetwork Accept: text/xml Cache-Control: no-cache Pragma: no-cache Host: 172.16.66.195:7010 Connection: keep-alive Content-Length: 13 statusLine: HTTP/1.1 200 OK code: OK Sending requested file to client...
Wireshark Screenshot	

4. Test Procedure 2
   A. Write down the name of person that you tested with

Web server owner's name	A
Web client owner's name	여주안

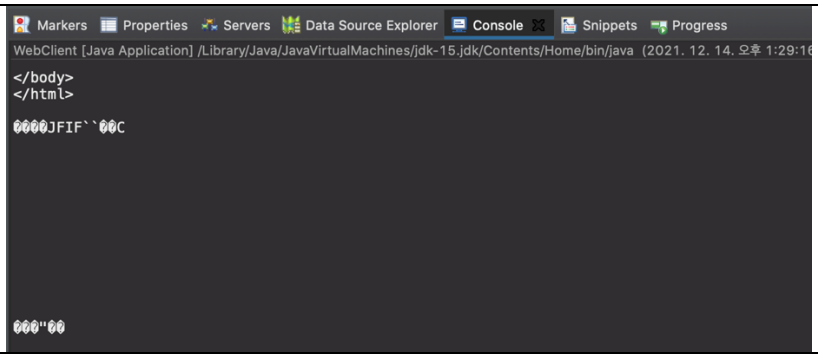
   B. Run wireshark

   C. Send GET Method to Web Server of your group member through your client
      i. Get studentID.html
      (e.g. GET http://127.0.0.1:8080/studentId.html)

Result Screenshot (Client)	
Result Screenshot (Server)	
Wireshark Screenshot	

ii. Get image.jpg

(e.g. GET http://127.0.0.1:8080/image.jpg)

Result Screenshot (Client)	

Result Screenshot (Server)	Problems Javadoc Declaration Console WebServer_blank [Java Application] C:₩Program Files₩Java₩jdk-14.0.2₩bin₩javaw.exe (2021. 12. 14. 오후 1:29:47) <HEAD><TITLE>?</TITLE></HEAD> <BODY>?</BODY> code OK type : text/html sending request file to Client... Received HTTP request: GET /image.jpg HTTP/1.1 file name: /image.jpg User-Agent: 2017027265/JUANYEO/WEBCLIENT/COMPUTERNETWORK Accept: text/html Host: 172.16.65.103:7035 Connection: keep-alive StatusLine : HTTP/1.1 200 OK entityBody : <HTML> <HEAD><TITLE>?</TITLE></HEAD> <BODY>?</BODY> code OK type : image/jpeg sending request file to Client...
Wireshark Screenshot	Apply a display filter ... <⌘/> No. Time Source Destination Protocol Length Info 15 2.023698 172.16.66.195 172.16.65.103 TCP 66 54457 → 7035 [ACK] Seq=155 Ack=66 Win 16 2.024658 172.16.65.103 172.16.66.195 HTTP 1354 HTTP/1.1 200 OK (JPEG JFIF image)Con 17 2.024665 172.16.65.103 172.16.66.195 HTTP 828 Continuation 18 2.024822 172.16.66.195 172.16.65.103 TCP 66 54457 → 7035 [ACK] Seq=155 Ack=1354 W 19 2.024823 172.16.66.195 172.16.65.103 TCP 66 54457 → 7035 [ACK] Seq=155 Ack=2116 W 20 2.025084 172.16.65.103 172.16.66.195 HTTP 1354 Continuation 21 2.025092 172.16.65.103 172.16.66.195 HTTP 826 Continuation 22 2.025181 172.16.66.195 172.16.65.103 TCP 66 54457 → 7035 [ACK] Seq=155 Ack=4164 W 23 2.028531 172.16.65.103 172.16.66.195 HTTP 1354 Continuation 24 2.028537 172.16.65.103 172.16.66.195 HTTP 826 Continuation 25 2.028639 172.16.66.195 172.16.65.103 TCP 66 54457 → 7035 [ACK] Seq=155 Ack=6212 W 26 2.029254 172.16.65.103 172.16.66.195 HTTP 1354 Continuation 27 2.029260 172.16.65.103 172.16.66.195 HTTP 826 Continuation 28 2.029298 172.16.65.103 172.16.66.195 HTTP 1354 Continuation 29 2.029299 172.16.65.103 172.16.66.195 HTTP 826 Continuation 30 2.029302 172.16.65.103 172.16.66.195 HTTP 1354 Continuation 31 2.029304 172.16.65.103 172.16.66.195 HTTP 826 Continuation 32 2.029402 172.16.66.195 172.16.65.103 TCP 66 54457 → 7035 [ACK] Seq=155 Ack=8260 W 33 2.029495 172.16.66.195 172.16.65.103 TCP 66 54457 → 7035 [ACK] Seq=155 Ack=10308

D. Send POST Method to Web Server of group member through your client (e.g. POST http://127.0.0.1:8080/studentId.html)

Result Screenshot (Client)	Markers Properties Servers Data Source Explorer Console Snippets WebClient [Java Application] /Library/Java/JavaVirtualMachines/jdk-15.jdk/Contents/Home/bin/java (2021 POST <html> <head> </head> <body> html test test ..... </body> </html>

Result Screenshot (Server)	Problems @ Javadoc Declaration Console WebServer_blank [Java Application] C:₩Program Files₩Java₩jdk-14.0.2₩bin₩javaw.exe (2021. 12. 14. code OK type : text/html sending request file to Client... Received HTTP request: POST /2018021049.html HTTP/1.1 file name: /2018021049.html Content-Type: text/xml;charset=UTF-8 User-Agent: 2017027265/JUANYEO/WEBCLIENT/COMPUTERNETWORK Accept: text/xml Cache-Control: no-cache Pragma: no-cache Host: 172.16.65.103:7035 Connection: keep-alive Content-Length: 11 StatusLine : HTTP/1.1 200 OK entityBody : <HTML> <HEAD><TITLE>?</TITLE></HEAD> <BODY>?</BODY> code OK type : text/html sending request file to Client...
Wireshark Screenshot	Apply a display filter ... <⌘/> No. Time Source Destination Protocol Length Info 9 2.850905 172.16.66.195 172.16.65.103 TCP 327 54440 → 7035 [PSH, ACK] Seq=1 Ack=1 10 2.850906 172.16.66.195 172.16.65.103 HTTP/… 77 POST /2018021049.html HTTP/1.1 11 2.874964 172.16.65.103 172.16.66.195 TCP 66 7035 → 54440 [ACK] Seq=1 Ack=273 Win= 12 2.877546 172.16.65.103 172.16.66.195 TCP 67 7035 → 54440 [PSH, ACK] Seq=1 Ack=273 13 2.877703 172.16.66.195 172.16.65.103 TCP 66 54440 → 7035 [ACK] Seq=273 Ack=2 Win= 14 2.880169 172.16.65.103 172.16.66.195 HTTP 257 HTTP/1.1 200 OK (text/html) 15 2.880376 172.16.66.195 172.16.65.103 TCP 66 54440 → 7035 [ACK] Seq=273 Ack=194 Wi 16 2.882288 172.16.66.195 172.16.65.103 TCP 66 54440 → 7035 [FIN, ACK] Seq=273 Ack=1 17 2.894745 172.16.65.103 172.16.66.195 TCP 66 7035 → 54440 [ACK] Seq=194 Ack=274 Wi ▶ Frame 1: 305 bytes on wire (2440 bits), 305 bytes captured (2440 bits) on interface en0, id 0 ▶ Ethernet II, Src: Apple_bd:b5:ce (90:9c:4a:bd:b5:ce), Dst: Broadcast (ff:ff:ff:ff:ff:ff) ▼ Internet Protocol Version 4, Src: 172.16.66.195, Dst: 172.16.66.255 0100 .... = Version: 4

5. Test Procedure

A. Write down the name of person that you tested with

Web server owner's name	여주안
Web client owner's name	A

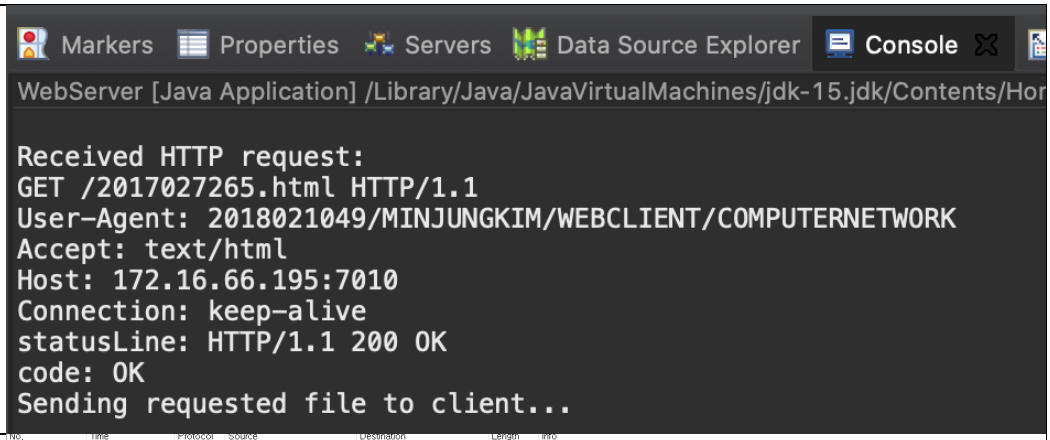
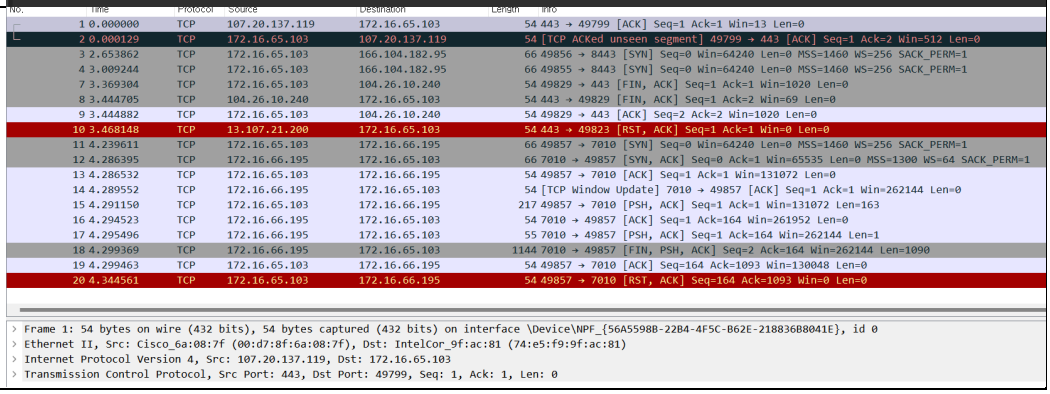
B. Run wireshark

C. Send GET Method to Web Server of your group member through your client

i. Get studentID.html

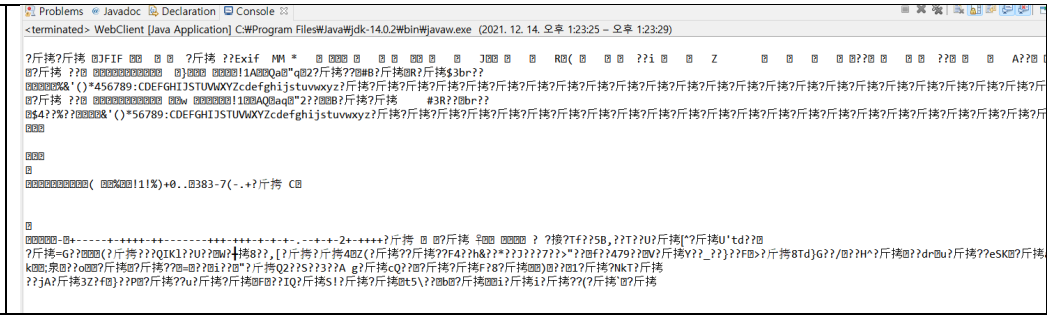
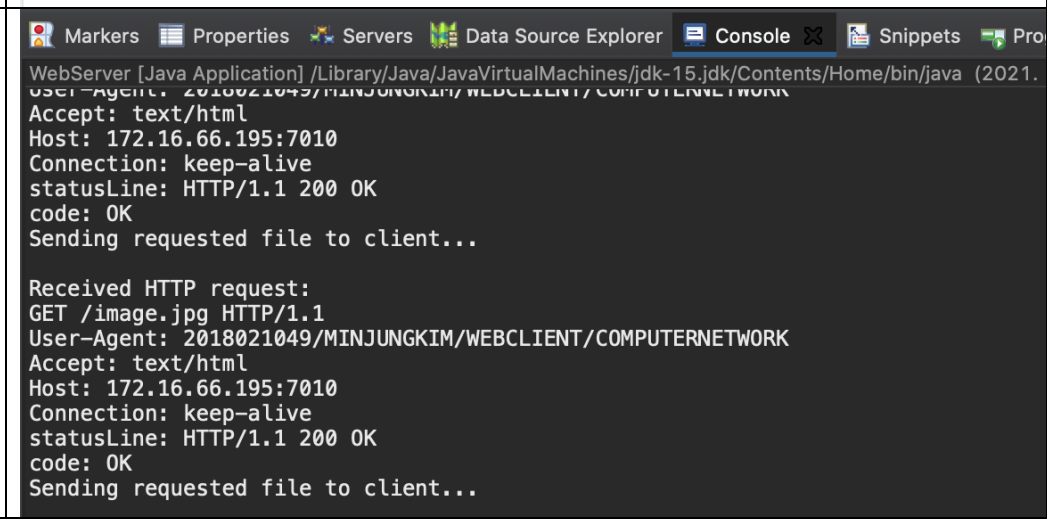
(e.g. GET http://127.0.0.1:8080/studentId.html)

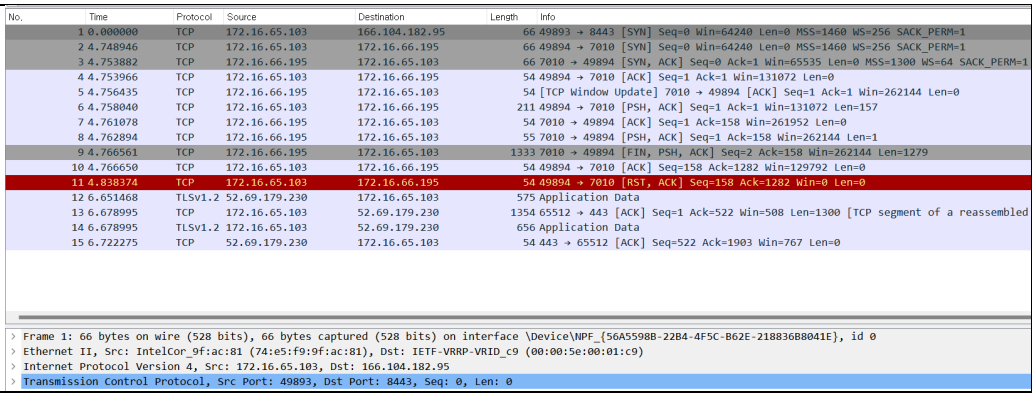
Result Screenshot (Client)	Problems @ Javadoc Declaration Console <terminated> WebClient [Java Application] C:₩Program Files₩Java₩jdk-14.0.2₩bin₩javaw.exe (2021. 12. 14. 오후 1:20:11 – 오후 1:20:13) <html> <body> KYH SERVER TEST PAGE 1234567890ABC Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam bibendum mi suscipit, mattis metus sit amet, elementum enim. Nulla Nunc velit elit, egestas non posuere a, hendrerit non enim. Maecenas sed tortor erat. Sed non nulla sapien. Duis accumsan, nisi </body> </html>

Result Screenshot (Server)	
Wireshark Screenshot	

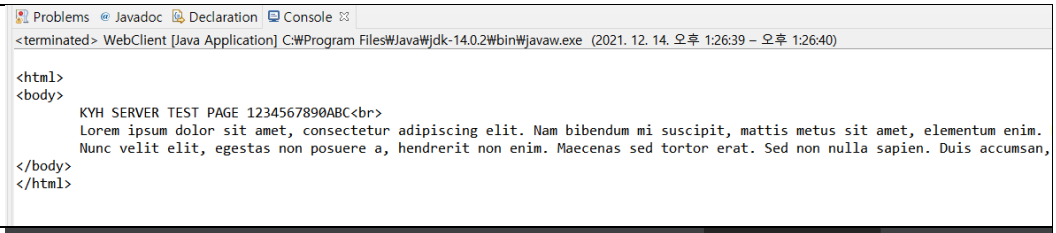
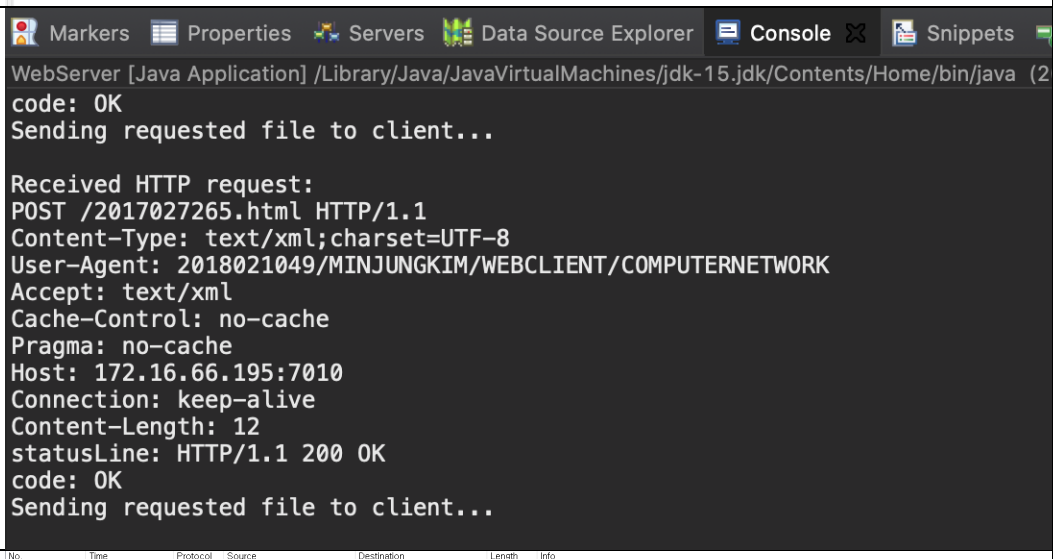
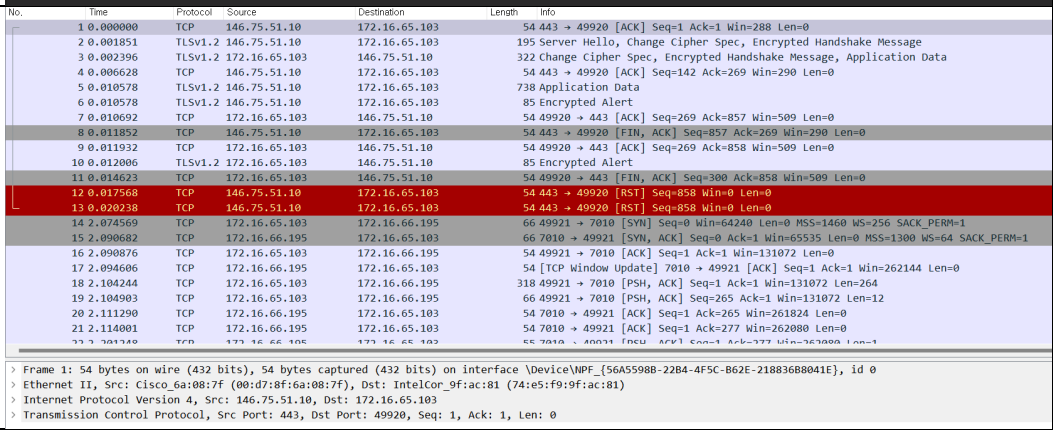
ii. Get image.jpg

(e.g. GET http://127.0.0.1:8080/image.jpg)

Result Screenshot (Client)	
Result Screenshot (Server)	

Wireshark Screenshot	

D. Send POST Method to Web Server of group member through your client (e.g. POST http://127.0.0.1:8080/studentId.html)

Result Screenshot (Client)	
Result Screenshot (Server)	
Wireshark Screenshot	

6. Test Procedure 3

A. Write down the name of person that you tested with

Web server owner's name	C
Web client owner's name	여주안

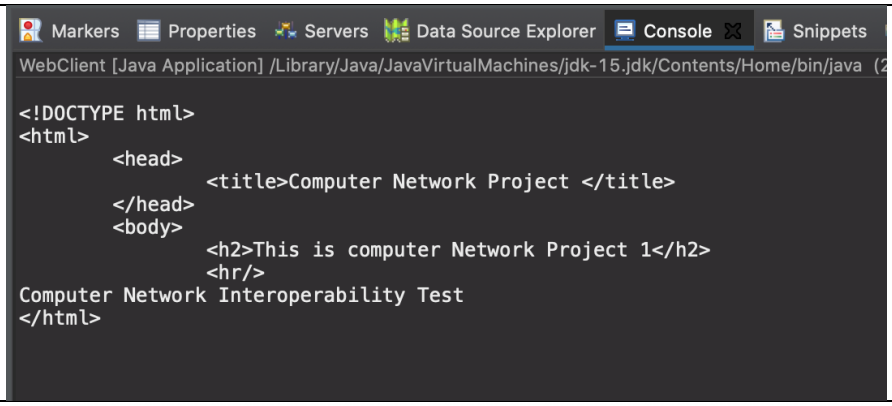
B. Run wireshark

C. Send GET Method to Web Server of your group member through your client

i. Get studentID.html

(e.g. GET http://127.0.0.1:8080/studentId.html)

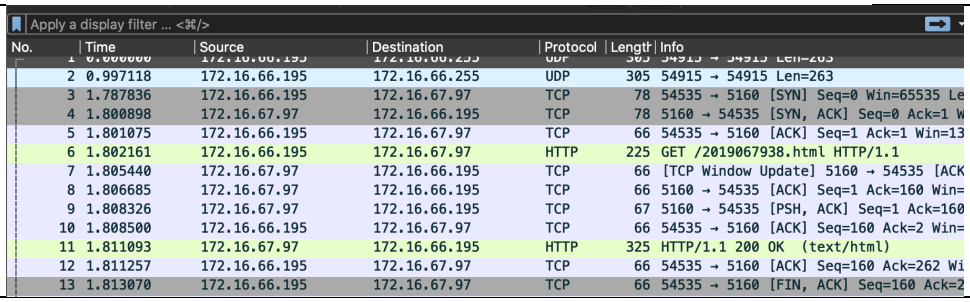
Result Screenshot (Client)



Result Screenshot (Server)

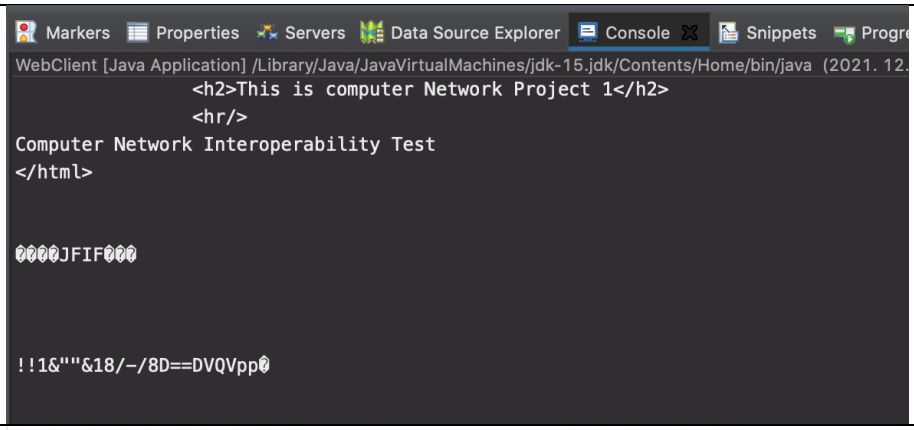
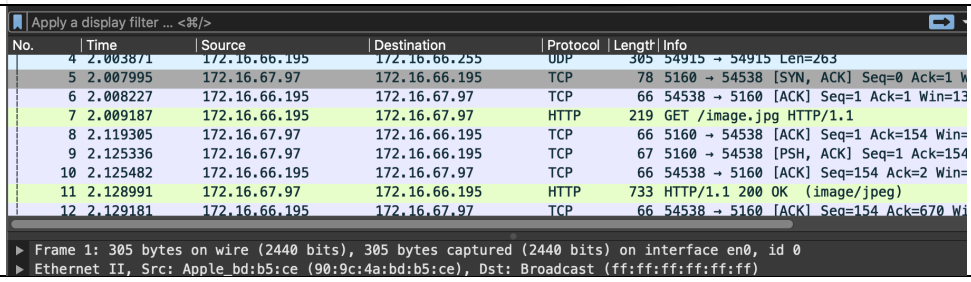
```
Received HTTP request:
GET /2019067938.html HTTP/1.1
1
./2019067938.html
User-Agent: 2017027265/JUANYEO/WEBCLIENT/COMPUTERNETWORK
Accept: text/html
Host: 172.16.67.97:5160
Connection: keep-alive
statusLine: HTTP/1.1 200 OK
code: OK
type : text/html
Sending requested file to client...
```

Wireshark Screenshot

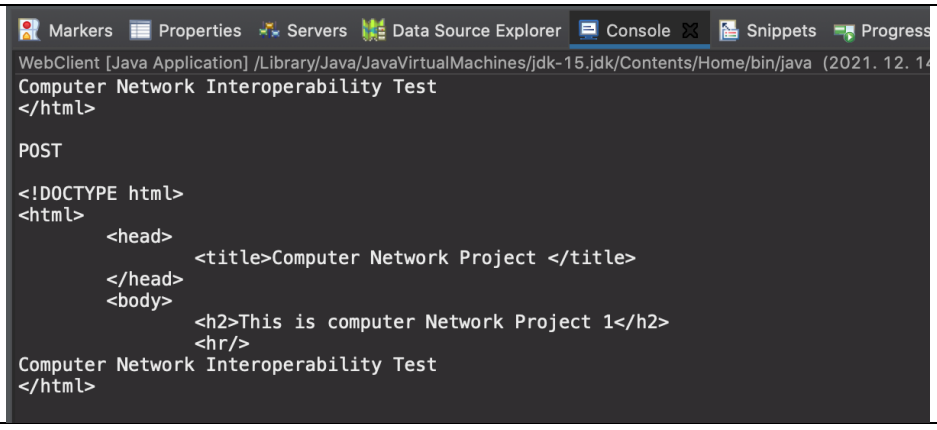


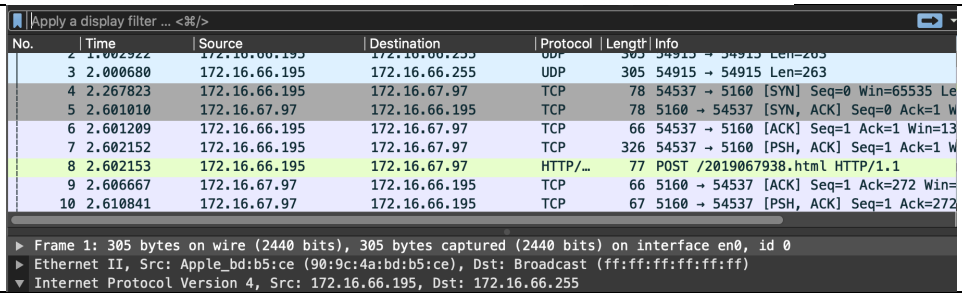
ii. Get image.jpg

(e.g. GET http://127.0.0.1:8080/image.jpg)

Result Screenshot (Client)	
Result Screenshot (Server)	Received HTTP request: GET /image.jpg HTTP/1.1 ./image.jpg User-Agent: 2017027265/JUANYEO/WEBCLIENT/COMPUTERNETWORK Accept: text/html Host: 172.16.67.97:5160 Connection: keep-alive statusLine: HTTP/1.1 200 OK code: OK type : image/jpeg Sending requested file to client...
Wireshark Screenshot	

D. Send POST Method to Web Server of group member through your client (e.g. POST http://127.0.0.1:8080/studentId.html)

Result Screenshot (Client)	

Result Screenshot (Server)	Received HTTP request: POST /2019067938.html HTTP/1.1 1 ./2019067938.html Content-Type: text/xml;charset=UTF-8 User-Agent: 2017027265/JUANYEO/WEBCLIENT/COMPUTERNETWORK Accept: text/xml Cache-Control: no-cache Pragma: no-cache Host: 172.16.67.97:5160 Connection: keep-alive Content-Length: 11 statusLine: HTTP/1.1 200 OK code: OK type : text/html Sending requested file to client...
Wireshark Screenshot	

7. Test Procedure

A. Write down the name of person that you tested with

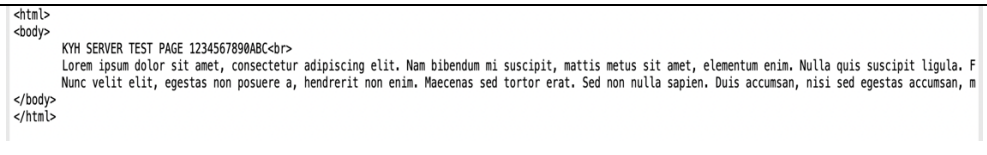
Web server owner's name	여주안
Web client owner's name	C

B. Run wireshark

C. Send GET Method to Web Server of your group member through your client

i. Get studentID.html

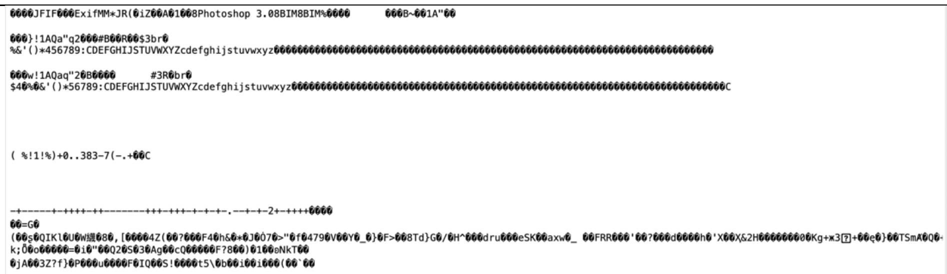
(e.g. GET http://127.0.0.1:8080/studentId.html)

Result Screenshot (Client)	
Result Screenshot (Server)	Received HTTP request: GET /2017027265.html HTTP/1.1 User-Agent: 2019067938/HYOEUNJEONG/WEBCLIENT/COMPUTERNETWORK Accept: text/html Host: 172.16.66.195:7010 Connection: keep-alive statusLine: HTTP/1.1 200 OK code: OK Sending requested file to client...

Wireshark Screenshot	8 3.311231 172.16.67.97 172.16.66.195 HTTP 230 GET /2017027265.html HTTP/1.1 9 3.311304 172.16.66.195 172.16.67.97 TCP 66 [TCP Window Update] 7010 → 4991 10 3.315601 172.16.66.195 172.16.67.97 TCP 66 7010 → 49912 [ACK] Seq=1 Ack=16 11 3.322606 172.16.66.195 172.16.67.97 HTTP 67 Continuation 12 3.322666 172.16.67.97 172.16.66.195 TCP 66 49912 → 7010 [ACK] Seq=165 Ack= 13 3.412323 172.16.66.195 172.16.67.97 HTTP 1156 Continuation

ii. Get image.jpg

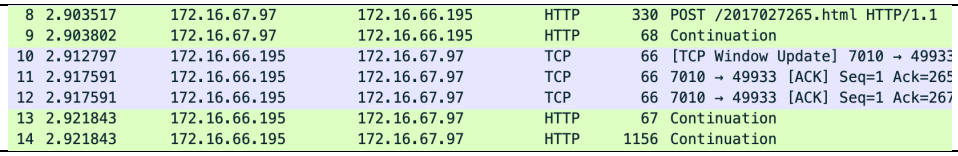
(e.g. GET http://127.0.0.1:8080/image.jpg)

Result Screenshot (Client)	
Result Screenshot (Server)	Received HTTP request: GET /image.jpg HTTP/1.1 User-Agent: 2019067938/HYOEUNJEONG/WEBCLIENT/COMPUTERNETWORK Accept: text/html Host: 172.16.66.195:7010 Connection: keep-alive statusLine: HTTP/1.1 200 OK code: OK Sending requested file to client...
Wireshark Screenshot	11 1.419712 172.16.67.97 172.16.66.195 HTTP 224 GET /image.jpg HTTP/1.1 12 1.419754 172.16.66.195 172.16.67.97 TCP 66 [TCP Window Update] 7010 13 1.448856 172.16.66.195 172.16.67.97 TCP 66 7010 → 49915 [ACK] Seq=1 14 1.449810 172.16.66.195 172.16.67.97 HTTP 67 Continuation 15 1.449810 172.16.66.195 172.16.67.97 HTTP 1345 Continuation

D. Send POST Method to Web Server of group member through your client

(e.g. POST http://127.0.0.1:8080/studentId.html)

Result Screenshot (Client)	POST <html> <body> KYH SERVER TEST PAGE 1234567890ABC Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam bibendum mi suscipit, mattis metus sit amet, elementum enim. Nulla quis suscipit ligula. F Nunc velit elit, egestas non posuere a, hendrerit non enim. Maecenas sed tortor erat. Sed non nulla sapien. Duis accumsan, nisi sed egestas accumsan, m </body> </html>
Result Screenshot (Server)	Received HTTP request: POST /2017027265.html HTTP/1.1 Content-Type: text/xml;charset=UTF-8 User-Agent: 2019067938/HYOEUNJEONG/WEBCLIENT/COMPUTERNETWORK Accept: text/xml Cache-Control: no-cache Pragma: no-cache Host: 172.16.66.195:7010 Connection: keep-alive Content-Length: 2 statusLine: HTTP/1.1 200 OK code: OK Sending requested file to client...

Wireshark Screenshot	

8	2.903517	172.16.67.97	172.16.66.195	HTTP	330	POST /2017027265.html HTTP/1.1
9	2.903802	172.16.67.97	172.16.66.195	HTTP	68	Continuation
10	2.912797	172.16.66.195	172.16.67.97	TCP	66	[TCP Window Update] 7010 → 49933
11	2.917591	172.16.66.195	172.16.67.97	TCP	66	7010 → 49933 [ACK] Seq=1 Ack=265
12	2.917591	172.16.66.195	172.16.67.97	TCP	66	7010 → 49933 [ACK] Seq=1 Ack=267
13	2.921843	172.16.66.195	172.16.67.97	HTTP	67	Continuation
14	2.921843	172.16.66.195	172.16.67.97	HTTP	1156	Continuation

8. Feeling

다른 기기의 프로그램과 연결되는 것을 보고 보람을 느꼈습니다. 와이어샤크 화면도 찍어야 해서 예상보다 시간이 걸렸지만 마무리를 잘 한 것 같아 좋습니다 ☺