

# Computer Network Project 4 Enhanced Proxy Server

CSI4106-01

Fall, 2017

**(Difficulty ☆)**



A blue cat's face is visible in the background, centered and slightly out of focus. The cat has blue fur, white markings on its muzzle and chest, and black whiskers and eyes.

# Mandatory Assignment (50pts)

- Make sure to finish the project 3

# **Mandatory Assignment (50pts)**

- Welcome to GIVEAWAY. Win 50pts!
- Make sure to finish the project 3 (proxy server)
- **If you are already done with project 3,**
  - **Grab 50pts as a gift.**
- **If not,**
  - **Finish it and get 50pts as mandatory assignment of Project 4 (not Project 3)**

# Additional Assignment (1) +30pts

- Goal: **Implement “Multithreading Feature”** and *at least one feature* among the features below which improves the performance of your proxy server.
- **The strategies increasing performance**
  - HTTP Payload Compression (gzip)
  - Chunking (Transfer-encoding)
  - Persistent Connection (Socket-reuse)

# Additional Assignment (1)

- Hint: Google is god and everything.
- ***Directions (to do in your report)***
  - Explain how it works in detail.
  - Describe why this makes your proxy server faster in detail.
  - Compare the performance(speed) before and after in detail

mt=Multithreaded, comp=GzipCompression, chunk=Chunking, pc=Persistent Connection

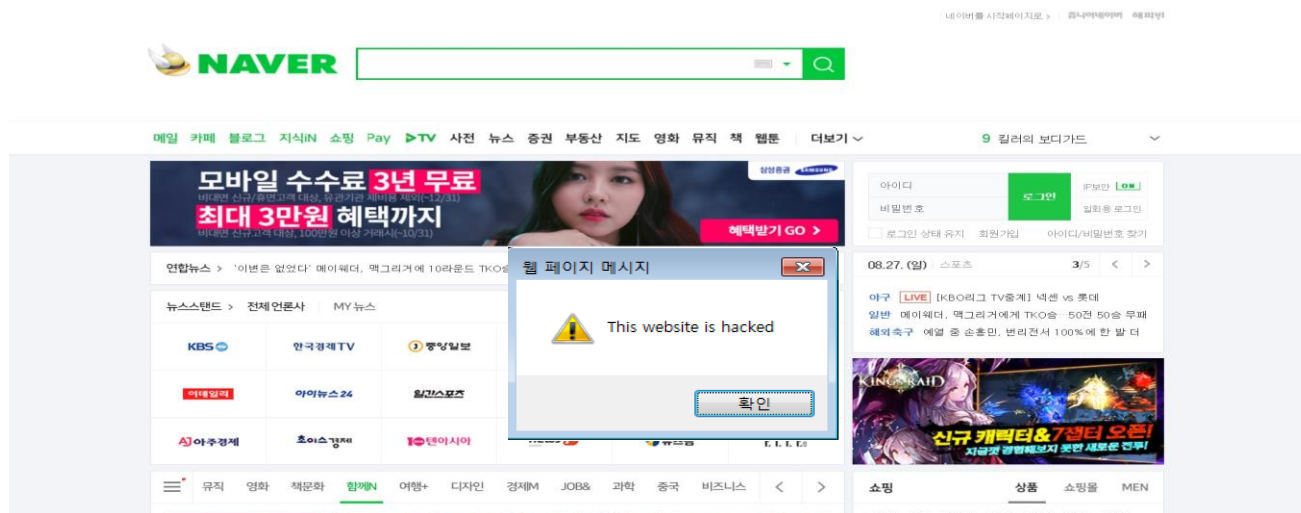
(Format) `./run.sh port [-mt, -comp, -chunk, -pc]`

(Example) `./run.sh 9001 -mt -pc -chunk`

**Note: Arguments are Case/Order Insensitive!!**

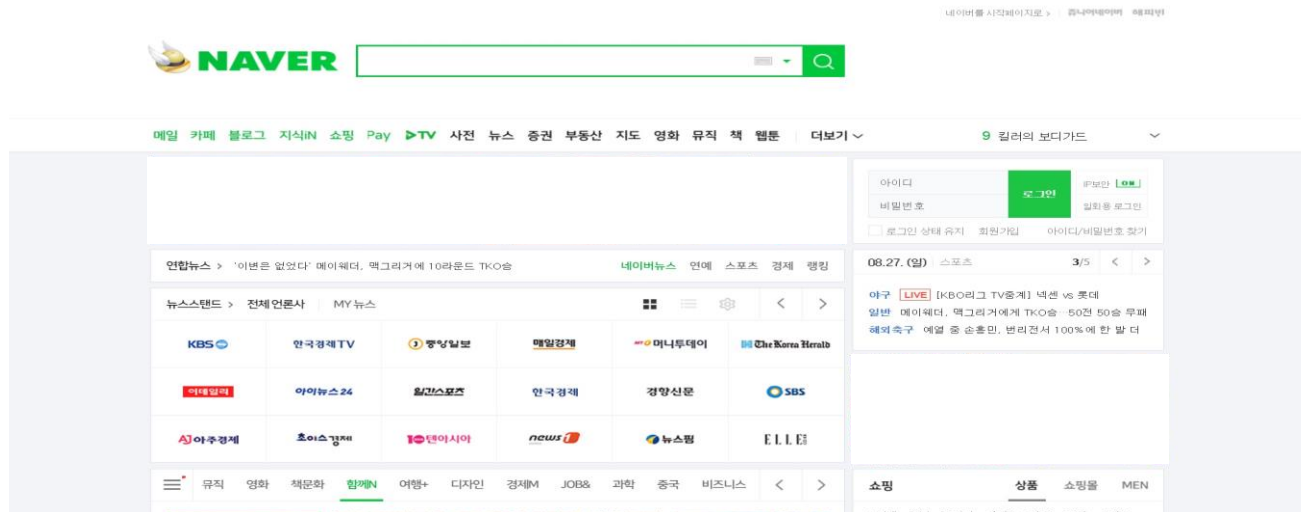
# Additional Assignment (2) +5pts

- **Goal: Falsify responses with injection HTML**
- **http://[URL]?start\_popup**
  - With this command, all sites will show the pop-up like below (Message is This website is hacked).
- To stop it: **http://[URL]?stop\_popup**



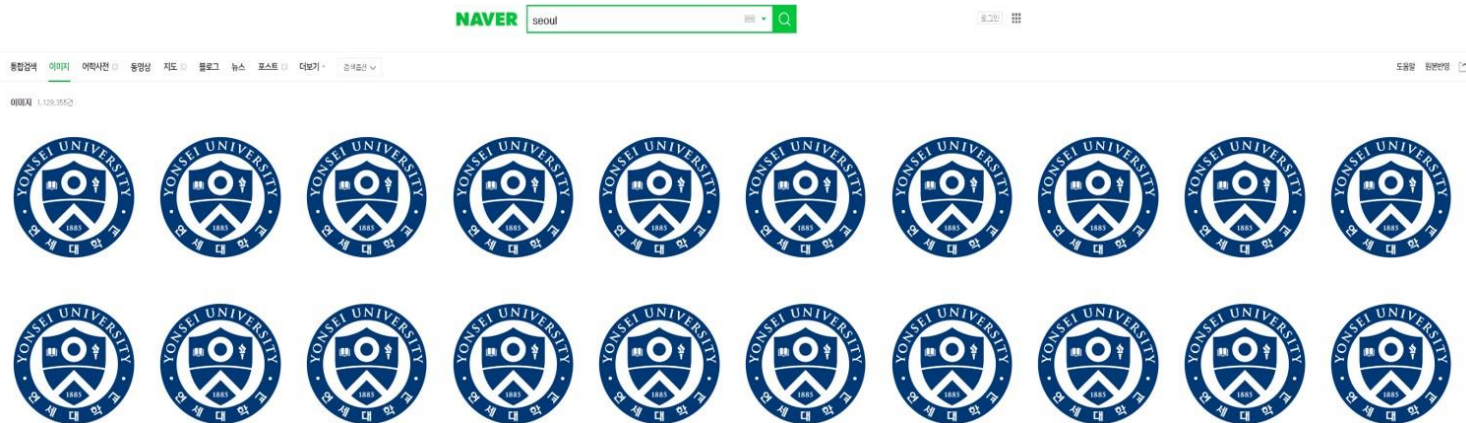
# Additional Assignment (3) +5pts

- **Goal: Filter out requests with a specific domain**
- **http://[URL]?start\_adblock**
  - With this command, all requests whose domain contains \*ad\* will be dropped. (Regular Expression)
- To stop it: **http://[URL]?stop\_adblock**



# Additional Assignment (4) +10pts

- **Goal: Forge the actual payload of responses**
- **http://[URL]?start\_forging**
  - With this command, the actual payload of responses whose content-type is image/jpeg will be changed to Yonsei Logo.
- To stop it: **http://[URL]?stop\_forging**





# For all additional assignments

- Directions
  - Follow the logging format below

\* ? is O or X (indicator). MT/Comp/Chunk/PC = for AA1. Popup/Adblock/Foraging = for AA2

Starting proxy server on port 9001  
[O] MT | [X] Comp | [O] Chunk | [O] PC

-----  
1 [O] Popup | [X] Adblock | [X] Foraging  
[CLI connected to 127.0.0.1:4994]  
[CLI ==> PRX --- SRV]  
 > GET /static/a.js  
[SRV connected to cs.yonsei.ac.kr:80]  
[CLI --- PRX ==> SRV]  
 > GET /static/a.js  
[CLI --- PRX <== SRV]  
 > 200 OK  
 > application/javascript 3858bytes  
[CLI <== PRX --- SRV]  
 > 200 OK  
 > application/javascript 6558bytes  
[CLI disconnected]  
[SRV disconnected]

Starting proxy server on port **PORT\_NUMBER**  
**[?] MT | [?] Comp | [?] Chunk | [?] PC**

-----  
**NO [?] Popup | [?] Adblock | [?] Foraging**  
[CLI connected to **CLI\_IP:CLI\_PORT**]  
[CLI ==> PRX --- SRV]  
 > **Request\_1<sup>st</sup>\_Line\_from\_Client**  
[SRV connected to **DST\_DOMAIN:DST\_PORT**]  
[CLI --- PRX ==> SRV]  
 > **Request\_1<sup>st</sup>\_Line\_to\_Server**  
[CLI --- PRX <== SRV]  
 > **Response\_Status\_Code\_from\_Server**  
 > **Response\_MIME\_Type Response\_Size**bytes  
[CLI <== PRX --- SRV]  
 > **Response\_Status\_Code\_to\_Client**  
 > **MIME\_Type\_to\_Client Size\_to\_Client**bytes  
[CLI disconnected]  
[SRV disconnected]

# Background

- Project 1
- Project 2
- Project 3**
- Google



# Directions

*This is project 4*

- This is an individual project ~~but it's not.~~
- Language: **C or Python**
  - C: gcc 4.8.5
  - Python: Python 2 ( $\geq 2.7.5$ ) or Python 3 ( $\geq 3.5.2$ )
- OS: **CentOS 7 or Ubuntu 14.04** or higher
- You can use *internal* libraries.
  - *Any 3<sup>rd</sup> party framework: ALLOWED*

*~It's okay this time!~*

# Deliverables:

**OS[c|u]\_YourID\_ProjectNo.zip**  
(e.g., **u\_2017147123\_4.zip**)

>>>>> **Do not include any folders in the zip file**  
**TA tests with `./setup.sh` && `./run.sh`**

- **project.py or project.c**

- Your code with detail comments

- **run.sh**

- This runs your webserver in **background**.

- **setup.sh**

- This should install dependencies or compile your code

- **report.pdf**

- Your comprehensive comments of this project

- **DUE DATE**

**24/Nov/2017 23:59:59 KST**

**No exception for exceeding deadline**

- **Delay Policy**  
**Not Allowed**



**You agree with the following statement  
by submitting your assignment on YSCEC**

**Using your friend (codes)  
is not Code Referencing,**

**Plagiarizing = 0pts = Fail**

**No exception for any kinds of cheating and copying**

# Score Policy: *Max. 50+50 pts*

1	Not submitted / not working / missing files	0 pts
2	Overdue → No delay allowed	0 pts
3	Your proxy server still malfunctions	-50 pts
4	Additional assignments are implemented	+30/+5/+5/+10 pts
5	The rules or directions are not followed	-10 pts/rule
6	Any 3 <sup>rd</sup> party framework is used	-0 pts ~ +0 pts
7	Plagiarizing / Over-implementation (Any kinds of Suspicion of Code-copy)	0 pts
8	Impolite Report / Lack of Comments	0 pts / -50 <u>%</u> pts

