**Website**

* Public IP Address of your website and port numbers corresponding to each server
  + <http://157.230.57.144>
  + Port number for Apache is 8081 and for Nginx is 8082.
* Directory structure of your webpage
  + All html files are located under /var/www/html/
  + Files under html directory: custom\_403.html custom\_404.html favicon.png index.html index.nginx-debian.html info.php jquery-3.2.1.js report\_apache.html report\_nginx.html robots.txt test.css test.html test.jpg
* Link to your phpinfo( ) test page

* + [http://157.230.57.144](http://157.230.57.144:8081/info):8081/info
* Login/ Authentication details for the web page
  + Apache
    - username: ying
    - password: cse135
  + Nginx
    - unsername: yifan
    - password: cse135

**Code**

* GitHub repository with code, configuration files
  + We don’t have a GitHub repository, but we have achieved the goal by adding remote. You can see the detailed instruction in the README.
  + Link to README: <https://github.com/wuyyyying/CSE135-HW1/blob/master/README>
* README documenting steps that you took to finish the various task.
* Dump of log files of various servers
  + Please see access\_apache.log
    - [https://github.com/wuyyyying/CSE135-HW1/blob/master/access\_apache.log](%09https:/github.com/wuyyyying/CSE135-HW1/blob/master/access_apache.log)
  + and access\_ngnix.log
    - [https://github.com/wuyyyying/CSE135-HW1/blob/master/access\_nginx.log](%09https:/github.com/wuyyyying/CSE135-HW1/blob/master/access_nginx.log)

**Reports**

* Print the output of the W3C validator to PDF
  + Link to validator\_output.pdf: <https://github.com/wuyyyying/CSE135-HW1/blob/master/validator_output.pdf>
* Comparison report of gzip outputs
  + Nginx
    - By default, only .html files can be compressed by gzip in Nginx.
    - The original output of command curl -H "Accept-Encoding: gzip" -I <http://157.230.57.144:8082/test.css> is

HTTP/1.1 200 OK

Server: nginx

Date: Mon, 28 Jan 2019 04:51:24 GMT

Content-Type: text/css

Content-Length: 1024

Last-Modified: Mon, 28 Jan 2019 04:25:17 GMT

Connection: keep-alive

ETag: "5c4e842d-400"

Accept-Ranges: bytes

* + - After editing the nginx.conf, the output becomes

HTTP/1.1 200 OK

Server: nginx

Date: Mon, 28 Jan 2019 04:46:53 GMT

Content-Type: text/css

Last-Modified: Mon, 28 Jan 2019 04:25:17 GMT

Connection: keep-alive

Vary: Accept-Encoding

ETag: W/"5c4e842d-400"

Content-Encoding: gzip

* + - Notice the last line Content-Encoding: gzip indicates that we have successfully compressed the file test.css using gzip.
  + Apache
    - The original size of compressed html files is 79456 bytes with the default configuration in (000-default.conf) of
      * DeflateCompressionLevel 9
      * DeflateMemLevel 9
      * DeflateWindowSize 15
    - After we modify the configuration to
      * DeflateCompressionLevel 7
      * DeflateMemLevel 8
      * DeflateWindowSize 10
    - The new size of compressed html files is 268039 bytes which is a lot larger than the original size. The default compression levels are set to the highest which are 9,9,15. The new size of compressed files becomes larger as we changed the levels to lower values 7,8,10.
* Output of your log reports
  + Please see report\_apache.html

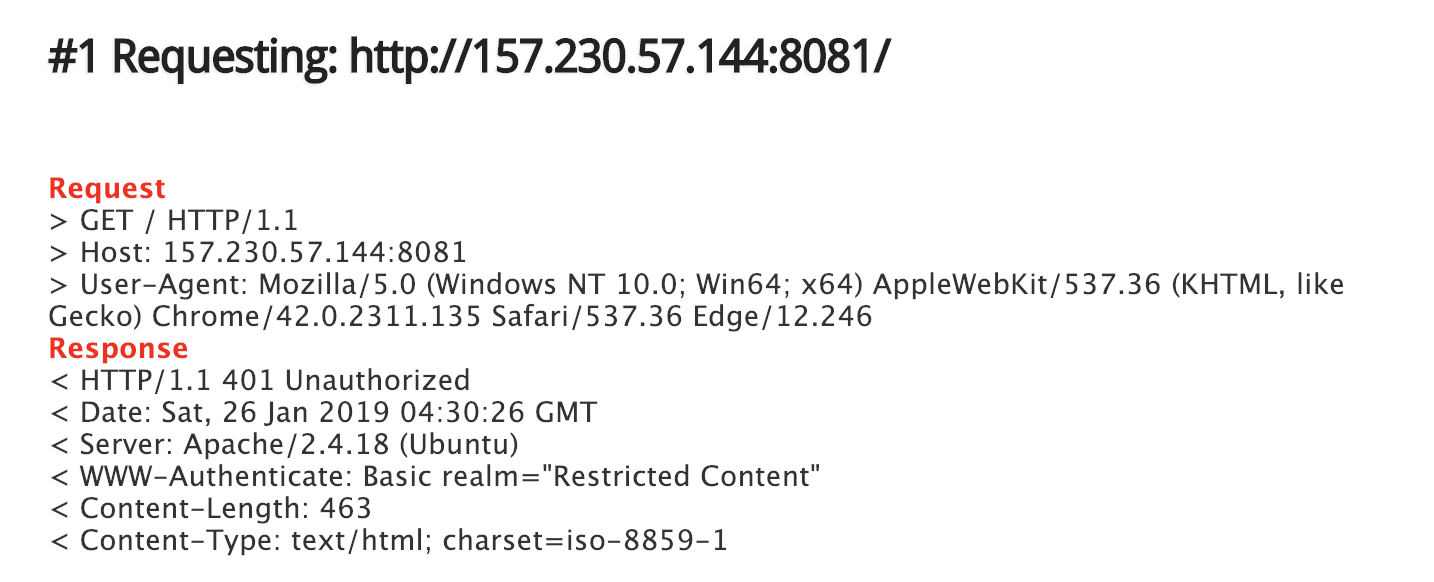
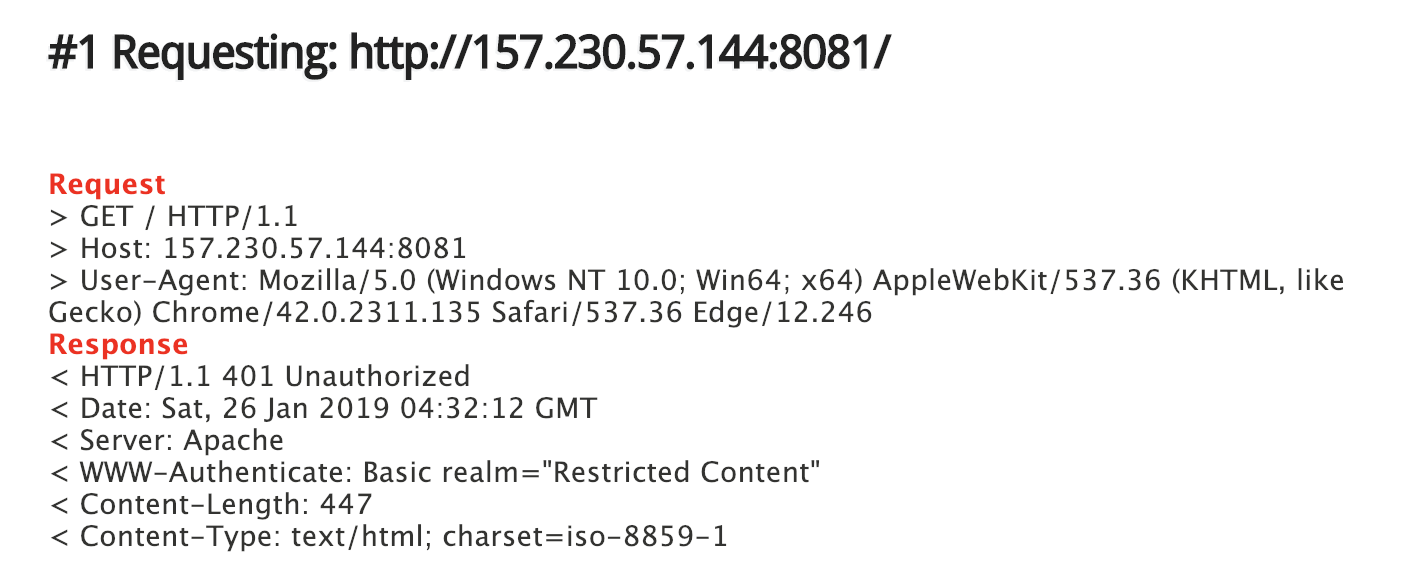
* + - [https://github.com/wuyyyying/CSE135-HW1/blob/master/report\_apache.html](%09https:/github.com/wuyyyying/CSE135-HW1/blob/master/report_apache.html)
  + and report\_nginx.html
    - [https://github.com/wuyyyying/CSE135-HW1/blob/master/report\_nginx.html](%09https:/github.com/wuyyyying/CSE135-HW1/blob/master/report_nginx.html)
* Obscure server identity
  + Edit Apache2.conf to include the following settings.

ServerTokens Prod

ServerSignature Off

Header always unset "X-Powered-By"

Header unset "X-Powered-By"

* + The original header and the new request header are shown as below
    - The first picture has Server:Apache/2.4.18(Ubuntu)
    - The second header only has Server:Apache/2.4.18
  + Hence the new setting has minimize the request header though doesn’t remove it. After our research, we found that it is not possible to fully remove the header in Apache without resorting to editing the source code.
  + Similarly, by editing Ngix.conf, we can hide version number from headers. The original headers and new headers are shown as below.

