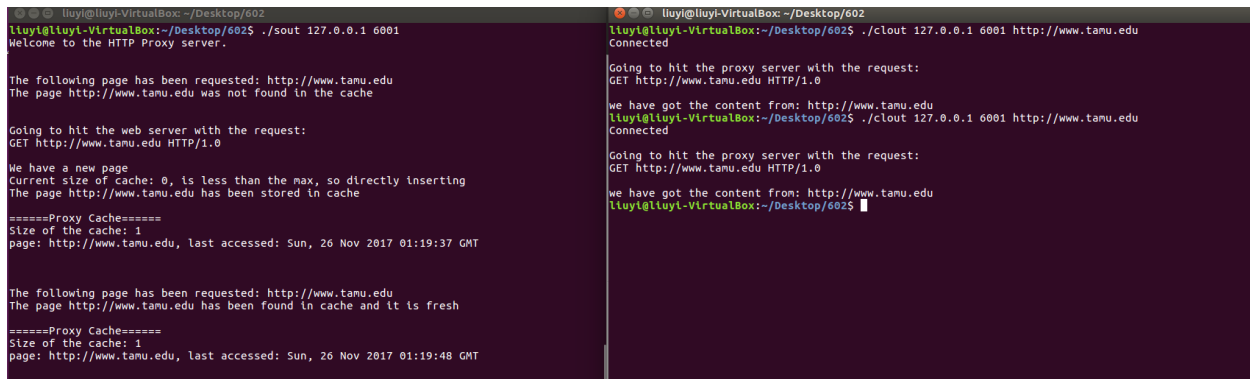


The cases required in this assignment have been tested (including the bonus part):

(1) A cache hit returns the saved data to the requester



```
lluyi@lluyi-VirtualBox: ~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001
Welcome to the HTTP Proxy server.

The following page has been requested: http://www.tamu.edu
The page http://www.tamu.edu was not found in the cache

Going to hit the web server with the request:
GET http://www.tamu.edu HTTP/1.0

We have a new page
Current size of cache: 0, is less than the max, so directly inserting
The page http://www.tamu.edu has been stored in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tamu.edu, last accessed: Sun, 26 Nov 2017 01:19:37 GMT

The following page has been requested: http://www.tamu.edu
The page http://www.tamu.edu has been found in cache and it is fresh

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tamu.edu, last accessed: Sun, 26 Nov 2017 01:19:48 GMT
```

```
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.tamu.edu
Connected

Going to hit the proxy server with the request:
GET http://www.tamu.edu HTTP/1.0

we have got the content from: http://www.tamu.edu
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.tamu.edu
Connected

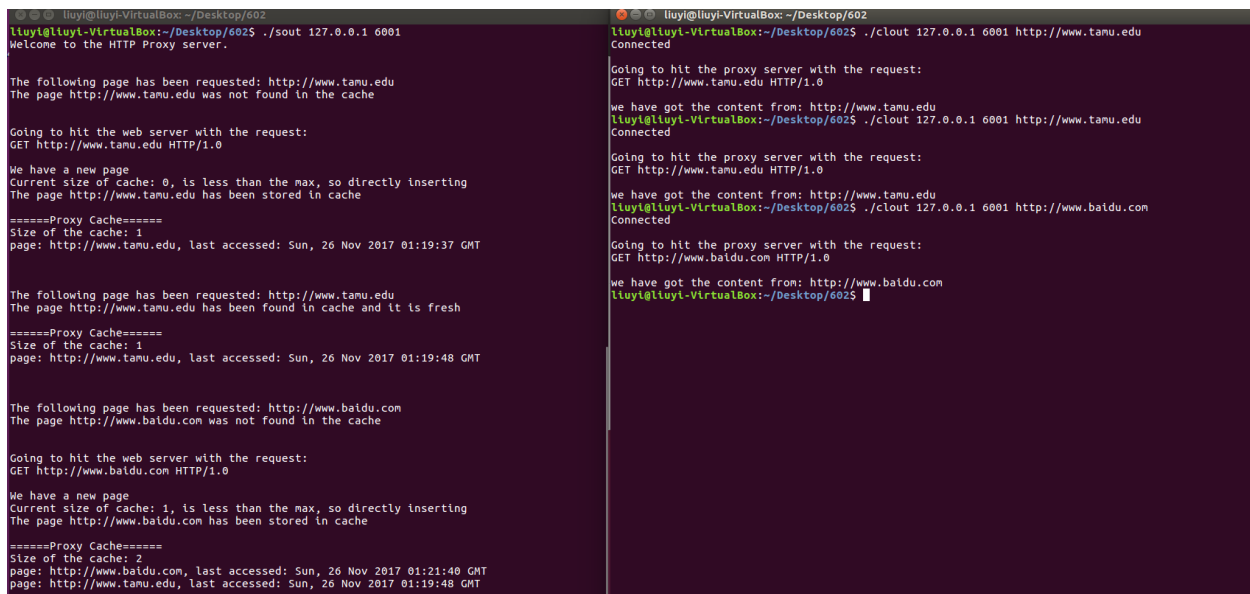
Going to hit the proxy server with the request:
GET http://www.tamu.edu HTTP/1.0

we have got the content from: http://www.tamu.edu
lluyi@lluyi-VirtualBox:~/Desktop/602$
```

Figure 1 test case1

In figure 1, the client hit the website <http://www.tamu.edu> first, the proxy server saved it; when the client hit it twice, the proxy server checked this website is fresh and return the saved entry rather than request the website again.

(2) A request that is not in the cache is proxied, saved in the cache, and returned to the requester



```
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001
Welcome to the HTTP Proxy server.

The following page has been requested: http://www.tamu.edu
The page http://www.tamu.edu was not found in the cache

Going to hit the web server with the request:
GET http://www.tamu.edu HTTP/1.0

We have a new page
Current size of cache: 0, is less than the max, so directly inserting
The page http://www.tamu.edu has been stored in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tamu.edu, last accessed: Sun, 26 Nov 2017 01:19:37 GMT

The following page has been requested: http://www.tamu.edu
The page http://www.tamu.edu has been found in cache and it is fresh

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tamu.edu, last accessed: Sun, 26 Nov 2017 01:19:48 GMT

The following page has been requested: http://www.baidu.com
The page http://www.baidu.com was not found in the cache

Going to hit the web server with the request:
GET http://www.baidu.com HTTP/1.0

We have a new page
Current size of cache: 1, is less than the max, so directly inserting
The page http://www.baidu.com has been stored in cache

=====Proxy Cache=====
Size of the cache: 2
page: http://www.baidu.com, last accessed: Sun, 26 Nov 2017 01:21:40 GMT
page: http://www.tamu.edu, last accessed: Sun, 26 Nov 2017 01:19:48 GMT
```

```
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.tamu.edu
Connected

Going to hit the proxy server with the request:
GET http://www.tamu.edu HTTP/1.0

we have got the content from: http://www.tamu.edu
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.tamu.edu
Connected

Going to hit the proxy server with the request:
GET http://www.tamu.edu HTTP/1.0

we have got the content from: http://www.tamu.edu
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.baidu.com
Connected

Going to hit the proxy server with the request:
GET http://www.baidu.com HTTP/1.0

we have got the content from: http://www.baidu.com
lluyi@lluyi-VirtualBox:~/Desktop/602$
```

Figure 2 test case2

In figure 2, client requested a new website <http://www.baidu.com> that was not in the cache, the proxy server proxied it, saved it, and returned it to the requester.

(3) A cache miss with 10 items already in the cache is proxied, saved in the LRU location in the cache, and the data is returned to the requester

```

liuyi@liuyi-VirtualBox: ~/Desktop/602
Going to hit the web server with the request:
GET http://www.google.com HTTP/1.0

We have a new page
Current size of cache: 9, is less than the max, so directly inserting
The page http://www.google.com has been stored in cache

=====Proxy Cache=====
Size of the cache: 10
page: http://www.alibaba.com, last accessed: Sun, 26 Nov 2017 01:44:58 GMT
page: http://www.amazon.com, last accessed: Sun, 26 Nov 2017 01:46:07 GMT
page: http://www.apple.com, last accessed: Sun, 26 Nov 2017 01:46:16 GMT
page: http://www.baidu.com, last accessed: Sun, 26 Nov 2017 01:44:49 GMT
page: http://www.ebay.com, last accessed: Sun, 26 Nov 2017 01:45:50 GMT
page: http://www.google.com, last accessed: Sun, 26 Nov 2017 01:46:29 GMT
page: http://www.microsoft.com, last accessed: Sun, 26 Nov 2017 01:45:58 GMT
page: http://www.pku.edu.cn, last accessed: Sun, 26 Nov 2017 01:45:13 GMT
page: http://www.tencent.com, last accessed: Sun, 26 Nov 2017 01:45:08 GMT
page: http://www.tsinghua.edu.cn, last accessed: Sun, 26 Nov 2017 01:45:21 GMT

The following page has been requested: http://www.tamu.edu
The page http://www.tamu.edu was not found in the cache

Going to hit the web server with the request:
GET http://www.tamu.edu HTTP/1.0

We have a new page
The least recently used page is http://www.baidu.com, hence this entry will be replaced in the cache
The page http://www.tamu.edu has been stored in cache

=====Proxy Cache=====
Size of the cache: 10
page: http://www.alibaba.com, last accessed: Sun, 26 Nov 2017 01:44:58 GMT
page: http://www.amazon.com, last accessed: Sun, 26 Nov 2017 01:46:07 GMT
page: http://www.apple.com, last accessed: Sun, 26 Nov 2017 01:46:16 GMT
page: http://www.ebay.com, last accessed: Sun, 26 Nov 2017 01:45:50 GMT
page: http://www.google.com, last accessed: Sun, 26 Nov 2017 01:46:29 GMT
page: http://www.microsoft.com, last accessed: Sun, 26 Nov 2017 01:45:58 GMT
page: http://www.pku.edu.cn, last accessed: Sun, 26 Nov 2017 01:45:13 GMT
page: http://www.tencent.com, last accessed: Sun, 26 Nov 2017 01:46:39 GMT
page: http://www.tsinghua.edu.cn, last accessed: Sun, 26 Nov 2017 01:45:21 GMT

liuyi@liuyi-VirtualBox: ~/Desktop/602
we have got the content from: http://www.tsinghua.edu.cn
liuyi@liuyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.ebay.com
Connected
Going to hit the proxy server with the request:
GET http://www.ebay.com HTTP/1.0

we have got the content from: http://www.ebay.com
liuyi@liuyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.microsoft.com
Connected
Going to hit the proxy server with the request:
GET http://www.microsoft.com HTTP/1.0

we have got the content from: http://www.microsoft.com
liuyi@liuyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.amazon.com
Connected
Going to hit the proxy server with the request:
GET http://www.amazon.com HTTP/1.0

we have got the content from: http://www.amazon.com
liuyi@liuyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.apple.com
Connected
Going to hit the proxy server with the request:
GET http://www.apple.com HTTP/1.0

we have got the content from: http://www.apple.com
liuyi@liuyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.google.com
Connected
Going to hit the proxy server with the request:
GET http://www.google.com HTTP/1.0

we have got the content from: http://www.google.com
liuyi@liuyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.tamu.edu
Connected
Going to hit the proxy server with the request:
GET http://www.tamu.edu HTTP/1.0

we have got the content from: http://www.tamu.edu
liuyi@liuyi-VirtualBox:~/Desktop/602$

```

Figure 3 test case3

In figure 3, the cache has reached its maximal size – 10, when the requester requested the 11th item <http://www.tamu.edu>, the least recent accessed website <http://www.baidu.com> was dropped, and <http://www.tamu.edu> was successfully added.

- (4) A stale Expires header in the cache is accessed, the cache entry is replaced with a fresh copy, and the fresh data is delivered to the requester

In figure 4, when the client first requested the website <http://www.tamu.edu>, the requested header shows that the website will expires at 01:54:13 GMT (the request time is 01:53:13 GMT), so after the expires time (01:55:20 GMT), the client requested the web again. This time, the web was requested, and the website is replaced by the new one, which is indicated in the bottom of the second figure. However, the number of cache did not increase.



Figure 4 test case4

- (5) A stale entry in the cache without an Expires header is determined based on the last Web server access time and last modification time, the stale cache entry is replaced with fresh data, and the fresh data is delivered to the requester

In the figure 5, we can see that, at first time, the client requested the web <http://www.alibaba.com>, there is not expires item in the header, so the expires time is determined by the last access time (there is no last modified time either). When the client requested the website again, the website in the cache is replaced by the new one, and further returned to the requester.

```
lluyi@lluyi-VirtualBox: ~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001
Welcome to the HTTP Proxy server.

The following page has been requested: http://www.alibaba.com
The page http://www.alibaba.com was not found in the cache

Going to hit the web server with the request:
GET http://www.alibaba.com HTTP/1.0

HTTP/1.1 302 Found
Server: Tengine
Date: Sun, 26 Nov 2017 02:35:36 GMT
Content-Type: text/html
Content-Length: 258
Connection: close
Set-Cookie: ali_apache_id=165.91.13.218.1511663736381.427365.9; path=/; domain=.alibaba.com; expires=Wed, 30-Nov-2084 01:01:01 GMT
Location: http://165.91.13.218
Strict-Transport-Security: max-age=31536000

<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html>
<head><title>302 Found</title></head>
<body bgcolor="white">
<h1>302 Found</h1>
<p>The requested resource resides temporarily under a different URI.</p>
<hr/>Powered by Tengine</body>
</html>

We have a new page
Current size of cache: 0, is less than the max, so directly inserting
The page http://www.alibaba.com has been stored in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.alibaba.com, last accessed: Sun, 26 Nov 2017 02:35:36 GMT

lluyi@lluyi-VirtualBox:~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001 http://www.alibaba.com
Connected

Going to hit the proxy server with the request:
GET http://www.alibaba.com HTTP/1.0

We have got the content from: http://www.alibaba.com
lluyi@lluyi-VirtualBox:~/Desktop/602$

lluyi@lluyi-VirtualBox:~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001 http://www.alibaba.com
Connected

Going to hit the proxy server with the request:
GET http://www.alibaba.com HTTP/1.0

We have got the content from: http://www.alibaba.com
lluyi@lluyi-VirtualBox:~/Desktop/602$

lluyi@lluyi-VirtualBox:~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001 http://www.alibaba.com
Connected

Going to hit the proxy server with the request:
GET http://www.alibaba.com HTTP/1.0

We have got the content from: http://www.alibaba.com
lluyi@lluyi-VirtualBox:~/Desktop/602$

lluyi@lluyi-VirtualBox:~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001 http://www.alibaba.com
Connected

Going to hit the proxy server with the request:
GET http://www.alibaba.com HTTP/1.0

If-Modified-Since: Sun, 26 Nov 2017 02:35:36 GMT

The response from the web server is: HTTP/1.1 302 Found

HTTP/1.1 302 Found
Server: Tengine
Date: Sun, 26 Nov 2017 02:35:57 GMT
Content-Type: text/html
Content-Length: 258
Connection: close
Set-Cookie: ali_apache_id=165.91.13.218.1511663757819.417107.7; path=/; domain=.alibaba.com; expires=Wed, 30-Nov-2084 01:01:01 GMT
Location: http://165.91.13.218
Strict-Transport-Security: max-age=31536000

<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html>
<head><title>302 Found</title></head>
<body bgcolor="white">
<h1>302 Found</h1>
<p>The requested resource resides temporarily under a different URI.</p>
<hr/>Powered by Tengine</body>
</html>

Entry found for page http://www.alibaba.com, this will be replaced with the new page now
The page http://www.alibaba.com has been replaced in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.alibaba.com, last accessed: Sun, 26 Nov 2017 02:35:57 GMT
```

Figure 5 test case5

- (6) A cache entry without an expires header that has been previously accessed from the web server in the last 24 hours and was last modified more than one month ago is returned to the requester

In figure 6, the website <http://www.cprogramming.com> is assumed to be modified one month ago, and it has no expires header. In this case, the expires time is determined by its last access time, so when the requester access the website at second time, the older one would be replaced by the newer one.

```
lluyi@lluyi-VirtualBox: ~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001
Welcome to the HTTP Proxy server.

The following page has been requested: http://www.cprogramming.com
The page http://www.cprogramming.com was not found in the cache

Going to hit the web server with the request:
GET http://www.cprogramming.com HTTP/1.0

HTTP/1.1 301 Moved Permanently
Date: Sun, 26 Nov 2017 22:47:36 GMT
Server: Apache
Location: https://406.shtml
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>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://406.shtml">here</a>.</p>
</body></html>

We have a new page
Current size of cache: 0, is less than the max, so directly inserting
The page http://www.cprogramming.com has been stored in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.cprogramming.com, last accessed: Sun, 26 Nov 2017 22:47:36 GMT
[]

lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.cprogramming.com
Connected

Going to hit the proxy server with the request:
GET http://www.cprogramming.com HTTP/1.0

we have got the content from: http://www.cprogramming.com
lluyi@lluyi-VirtualBox:~/Desktop/602$

lluyi@lluyi-VirtualBox:~/Desktop/602$
=====Proxy Cache=====
Size of the cache: 1
page: http://www.cprogramming.com, last accessed: Sun, 26 Nov 2017 22:47:36 GMT

The following page has been requested: http://www.cprogramming.com
We have a page whose entry in the cache was expired
The page http://www.cprogramming.com has been found in cache but it has expired
we are in if modified, httpsd: 7

Going to hit the web server with the conditional request:
GET http://www.cprogramming.com HTTP/1.0
If-Modified-Since: Sun, 26 Nov 2017 22:47:36 GMT

The response from the web server is: HTTP/1.1 301 Moved Permanently

HTTP/1.1 301 Moved Permanently
Date: Sun, 26 Nov 2017 22:47:55 GMT
Server: Apache
Location: https://406.shtml
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>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://406.shtml">here</a>.</p>
</body></html>
0 HTML 2.0//EN">
<html><head>
<title>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://406.shtml">here</a>.</p>
</body></html>

Entry found for page http://www.cprogramming.com, this will be replaced with the new page now
The page http://www.cprogramming.com has been replaced in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.cprogramming.com, last accessed: Sun, 26 Nov 2017 22:47:55 GMT

lluyi@lluyi-VirtualBox:~/Desktop/602$
=====Proxy Cache=====
Size of the cache: 1
page: http://www.cprogramming.com, last accessed: Sun, 26 Nov 2017 22:47:55 GMT

lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.cprogramming.com
Connected

Going to hit the proxy server with the request:
GET http://www.cprogramming.com HTTP/1.0

we have got the content from: http://www.cprogramming.com
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.cprogramming.com
Connected

Going to hit the proxy server with the request:
GET http://www.cprogramming.com HTTP/1.0

we have got the content from: http://www.cprogramming.com
lluyi@lluyi-VirtualBox:~/Desktop/602$
```

Figure 6 test case 6

(7) Three clients can simultaneously access the proxy server and get the correct data.

In figure 7, the 3 clients can simultaneously access the same website at the same time.

```
lluyi@lluyi-VirtualBox: ~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001
Welcome to the HTTP Proxy server.
server sd: 3

client sd: 4

The following page has been requested: http://www.tsinghua.edu.cn
Current size of cache: 0, is less than the max, so directly inserting

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tsinghua.edu.cn, last accessed: Sun, 26 Nov 2017 22:12:52 GMT

client sd: 6

The following page has been requested: http://www.tsinghua.edu.cn
we are in if modified, httpsd: 7
The response from the web server is: HTTP/1.1 304 Not Modified

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tsinghua.edu.cn, last accessed: Sun, 26 Nov 2017 22:12:56 GMT

client sd: 7

The following page has been requested: http://www.tsinghua.edu.cn
we are in if modified, httpsd: 8
The response from the web server is: HTTP/1.1 304 Not Modified

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tsinghua.edu.cn, last accessed: Sun, 26 Nov 2017 22:13:02 GMT

client sd: 8

The following page has been requested: http://www.tsinghua.edu.cn
we are in if modified, httpsd: 9
The response from the web server is: HTTP/1.1 304 Not Modified

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tsinghua.edu.cn, last accessed: Sun, 26 Nov 2017 22:13:58 GMT
```

Figure 7 test case 7

(8) Bonus part

(8.1) part (5)

```
lluyi@lluyi-VirtualBox: ~/Desktop/602
Connection: close
Last-Modified: Wed, 29 Apr 2015 07:00:32 GMT
ETag: "55408190-18b"
X-Frame-Options: SAMEORIGIN
X-Cache: HIT from TsinghuaCacheServer
Accept-Ranges: none

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"><head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>清华大学</title>
<script type="text/javascript">
window.location.href="/publish/newthu/index.html";
</script>
</head>
<body>
</body>
</html>

We have a new page
Current size of cache: 0, is less than the max, so directly inserting
The page http://www.tsinghua.edu.cn has been stored in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tsinghua.edu.cn, last accessed: Sun, 26 Nov 2017 02:31:36 GMT

The following page has been requested: http://www.tsinghua.edu.cn
We have a page whose entry in the cache was expired
The page http://www.tsinghua.edu.cn has been found in cache but it has expired

Going to hit the web server with the conditional request:
GET http://www.tsinghua.edu.cn HTTP/1.0
If-Modified-Since: Wed, 29 Apr 2015 07:00:32 GMT

The response from the web server is: HTTP/1.1 304 Not Modified

No need to get the page http://www.tsinghua.edu.cn from the server as it was not modified on the server

=====Proxy Cache=====
Size of the cache: 1
page: http://www.tsinghua.edu.cn, last accessed: Sun, 26 Nov 2017 02:32:31 GMT
```

Figure 8 bonus test for part (5)

In figure 8.1, we can see that when the client accessed the <http://www.tsinghua.edu.cn> at the second time, the proxy server would send a If-Modified-Since message to the target web, it got a message 304 Not Modified, so the proxy server send the entry in the cache to the requester, and update the last access time.

(8.2) part (6)

In figure 9, the test was basically the same with the part (6). The website <http://www.cprogramming.com> has no expires header, so we set the last access time as the expire time. When the client hit the website again, it will ask the target web if there is modifications since the expire time.

```

lluyi@lluyi-VirtualBox: ~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./sout 127.0.0.1 6001
Welcome to the HTTP Proxy server.

The following page has been requested: http://www.cprogramming.com
The page http://www.cprogramming.com was not found in the cache

Going to hit the web server with the request:
GET http://www.cprogramming.com HTTP/1.0

HTTP/1.1 301 Moved Permanently
Date: Sun, 26 Nov 2017 22:47:36 GMT
Server: Apache
Location: https://406.shtml
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>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://406.shtml">here</a>.</p>
</body></html>

We have a new page
Current size of cache: 0, is less than the max, so directly inserting
The page http://www.cprogramming.com has been stored in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.cprogramming.com, last accessed: Sun, 26 Nov 2017 22:47:36 GMT

```

```

lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.cprogramming.com
Connected

Going to hit the proxy server with the request:
GET http://www.cprogramming.com HTTP/1.0

we have got the content from: http://www.cprogramming.com
lluyi@lluyi-VirtualBox:~/Desktop/602$

```

```

lluyi@lluyi-VirtualBox:~/Desktop/602
=====Proxy Cache=====
Size of the cache: 1
page: http://www.cprogramming.com, last accessed: Sun, 26 Nov 2017 22:47:36 GMT

The following page has been requested: http://www.cprogramming.com
We have a page whose entry in the cache was expired
The page http://www.cprogramming.com has been found in cache but it has expired
we are in if modified, httpsd: 7

Going to hit the web server with the conditional request:
GET http://www.cprogramming.com HTTP/1.0
If-Modified-Since: Sun, 26 Nov 2017 22:47:36 GMT

The response from the web server is: HTTP/1.1 301 Moved Permanently

HTTP/1.1 301 Moved Permanently
Date: Sun, 26 Nov 2017 22:47:55 GMT
Server: Apache
Location: https://406.shtml
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>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://406.shtml">here</a>.</p>
</body></html>
D HTML 2.0//EN">
<html><head>
<title>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://406.shtml">here</a>.</p>
</body></html>

Entry found for page http://www.cprogramming.com, this will be replaced with the new page now
The page http://www.cprogramming.com has been replaced in cache

=====Proxy Cache=====
Size of the cache: 1
page: http://www.cprogramming.com, last accessed: Sun, 26 Nov 2017 22:47:55 GMT

```

```

lluyi@lluyi-VirtualBox:~/Desktop/602
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.cprogramming.com
Connected

Going to hit the proxy server with the request:
GET http://www.cprogramming.com HTTP/1.0

we have got the content from: http://www.cprogramming.com
lluyi@lluyi-VirtualBox:~/Desktop/602$ ./clout 127.0.0.1 6001 http://www.cprogramming.com
Connected

Going to hit the proxy server with the request:
GET http://www.cprogramming.com HTTP/1.0

we have got the content from: http://www.cprogramming.com
lluyi@lluyi-VirtualBox:~/Desktop/602$

```

Figure 9 bonus test for part (6)