

ECE9303A Assignment 1 – Xinyu Yun(xyun@uwo.ca)

Part.1: Socket Programming Assignment UDP

From the Server side, the log shows the random number and ping message it received:

```
XinyuYun:Documents devuser$ python UDPPingerServer.py
start receiving...
random number is 3
^[[AMessage received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 4
Message received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 6
Message received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 5
Message received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 5
Message received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 9
Message received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 6
Message received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 4
Message received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 1
Message received is ' ping message ' from ('127.0.0.1', 63498)
start receiving...
random number is 9
Message received is ' ping message ' from ('127.0.0.1', 63498)
.
```

From the client side, it shows 10 ping message, sending timestamp, server address and receiving timestamp, received message and RTT for each ping message.

At last, the summary about packets received counts, loss percentage and round time max/avg/min are calculated.

```
XinyuYun:Documents devuser$ python UDPPingerClient.py
Ping 1 2015-11-01 18:32:26:180044
Request timed out
Ping 2 2015-11-01 18:32:27:185446
Received from ('127.0.0.1', 12000) at 2015-11-01 18:32:27:186389
Received message: PING MESSAGE RTT= 0.000943 ms
Ping 3 2015-11-01 18:32:27:186490
Received from ('127.0.0.1', 12000) at 2015-11-01 18:32:27:186732
Received message: PING MESSAGE RTT= 0.000242 ms
Ping 4 2015-11-01 18:32:27:186827
Received from ('127.0.0.1', 12000) at 2015-11-01 18:32:27:187054
Received message: PING MESSAGE RTT= 0.000227 ms
Ping 5 2015-11-01 18:32:27:187117
Received from ('127.0.0.1', 12000) at 2015-11-01 18:32:27:187343
Received message: PING MESSAGE RTT= 0.000226 ms
Ping 6 2015-11-01 18:32:27:187401
Received from ('127.0.0.1', 12000) at 2015-11-01 18:32:27:187598
Received message: PING MESSAGE RTT= 0.000197 ms
Ping 7 2015-11-01 18:32:27:187660
Received from ('127.0.0.1', 12000) at 2015-11-01 18:32:27:187835
Received message: PING MESSAGE RTT= 0.000175 ms
Ping 8 2015-11-01 18:32:27:187902
Received from ('127.0.0.1', 12000) at 2015-11-01 18:32:27:188082
Received message: PING MESSAGE RTT= 0.00018 ms
Ping 9 2015-11-01 18:32:27:188144
Request timed out
Ping 10 2015-11-01 18:32:28:193472
Received from ('127.0.0.1', 12000) at 2015-11-01 18:32:28:193828
Received message: PING MESSAGE RTT= 0.000356 ms
10 packets transmitted, 8 packets received, 20.0 % packets loss
round-trip min/avg/max 0.000175 / 0.00031825 / 0.000943 ms
```

Part.2: Socket Programming Assignment – SMTP

Here I select ‘smpt.gmail.com’ as the email server to send email, so that the client code has to involve STARTTLS and login authorization before sending EMAL FROM.

Logs printed:

```

XinyuYun:Documents devuser$ python SMTPClient.py
---TCP connection has established---
1- 220 smtp.gmail.com ESMTP z74sm298268ioi.19 - gsmtp

2- 250 smtp.gmail.com at your service

3- 220 2.0.0 Ready to start TLS

4- 334 VXNlcM5hbWU6

5- 334 UGFzc3dvcmQ6

6- 235 2.7.0 Accepted

7- 250 2.1.0 OK z74sm298268ioi.19 - gsmtp

8- 250 2.1.5 OK z74sm298268ioi.19 - gsmtp

9- 354 Go ahead z74sm298268ioi.19 - gsmtp

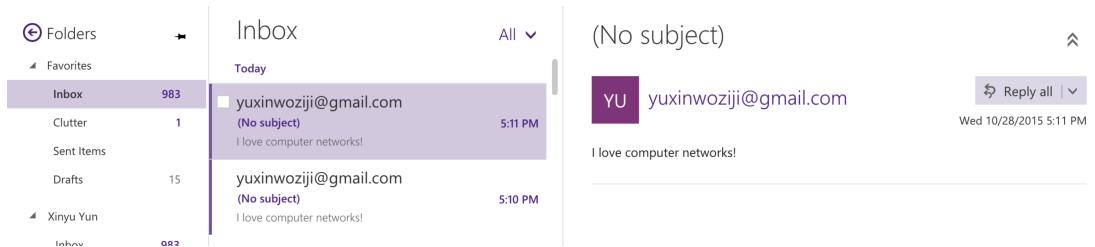
10- 250 2.0.0 OK 1446079336 z74sm298268ioi.19 - gsmtp

11- 221 2.0.0 closing connection z74sm298268ioi.19 - gsmtp

-----TCP socket closed-----
XinyuYun:Documents devuser$ 

```

Email received:



Part.3: Socket Programming Assignment - HTTP Web Proxy Server

Let take www.google.ca as the example, the first time when I visit localhost:8888/www.google.com, the proxy server will download the file requested using 'GET http://www.google.com HTTP/1.1'(here I change the HTTP version from 1.0 to 1.1 since most websites do not support 1.0, even though the Google will response with protection message)

Sorry... How do I... How do you... python Cache a... Algonquin... W3 Hypertext... Are there... Xinyu
localhost:8888/www.google.ca
应用 UWO OWL My Workspace Mail - Xinyu Yun - 登录学生中心 门户 movies,movies.....
Google Sorry...
We're sorry...
... but your computer or network may be sending automated queries. To protect our users, we can't process your request right now.
See [Google Help](#) for more information.

Below is the log records:

```

XinyuYun:~ devuser$ cd Documents/
XinyuYun:Documents devuser$ python ProxyServer.py 1.2.3.4
Ready to serve...
Received a connection from: ('127.0.0.1', 57491)
---TCP Client Received---
GET /www.google.ca HTTP/1.1
Host: localhost:8888
Connection: keep-alive
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_10_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/46.0.2490.80 Safari/537.36
Accept-Encoding: gzip, deflate, sdch
Accept-Language: zh-CN,zh;q=0.8,en;q=0.6,zh-TW;q=0.4

/www.google.ca
www.google.ca
/www.google.ca
filename in proxy is www.google.ca
false
web page does not exist in proxy cache!
hostname is google.ca
successful connection with google.ca
GET http://www.google.ca HTTP/1.0

---file buffer--- ['HTTP/1.0 403 Forbidden\r\n', 'Content-Length: 1103\r\n', 'Content-Type: text/html; charset=UTF-8\r\n', 'Date: Mon, 02 Nov 2015 01:46:57 GMT\r\n', 'Server: GFE/2.0\r\n', '','<html><head><meta http-equiv="content-type" content="text/html; charset=utf-8"/><title>Sorry...</title><style> body { font-family: verdana, arial, sans-serif; background-color: #fff; color: #000; }</style></head><body><div><table><tr><td><b><font face="sans-serif" size=10><font color="#4285f4">G</font><font color="#e44335">o</font><font color="#fbbc05">o</font><font color="#ea4335">e</font></font></td><td style="text-align: left; vertical-align: bottom; padding-bottom: 15px; width: 50%"><div style="border-bottom: 1px solid #dfdfdf;">Sorry...</div></td></tr></table></div><div style="margin-left: 4em;"><h1>We're sorry...</h1><p>... but your computer or network may be sending automated queries. To protect our users, we can't process your request right now.</p></div><div style="margin-left: 4em;">See <a href="https://support.google.com/websearch/answer/86640">Google Help</a> for more information.<br/><br/><div style="text-align: center; border-top: 1px solid #dfdfdf;"><a href="https://www.google.com">Google Home</a></div></body></html>']
Ready to serve...

```

Next time when I visit the same url, the proxy server will retrieve the downloaded file to response:



```

Ready to serve...
Received a connection from: ('127.0.0.1', 57493)
---TCP Client Received---
GET /www.google.ca HTTP/1.1
Host: localhost:8888
Connection: keep-alive
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_10_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/46.0.2490.80 Safari/537.36
Accept-Encoding: gzip, deflate, sdch
Accept-Language: zh-CN,zh;q=0.8,en;q=0.6,zh-TW;q=0.4

/www.google.ca
www.google.ca
/www.google.ca
filename in proxy is www.google.ca
false
---file found in cache--- HTTP/1.0 403 Forbidden
Content-Length: 1103
Content-Type: text/html; charset=UTF-8
Date: Mon, 02 Nov 2015 01:46:57 GMT
Server: GFE/2.0

<html><head><meta http-equiv="content-type" content="text/html; charset=utf-8"/><title>Sorry...</title><style> body { font-family: verdana, arial, sans-serif; background-color: #fff; color: #000; }</style></head><body><div><table><tr><td><b><font face="sans-serif" size=10><font color="#4285f4">G</font><font color="#e44335">o</font><font color="#fbbc05">o</font><font color="#ea4335">e</font></font></td><td style="text-align: left; vertical-align: bottom; padding-bottom: 15px; width: 50%"><div style="border-bottom: 1px solid #dfdfdf;">Sorry...</div></td></tr></table></div><div style="margin-left: 4em;"><h1>We're sorry...</h1><p>... but your computer or network may be sending automated queries. To protect our users, we can't process your request right now.</p></div><div style="margin-left: 4em;">See <a href="https://support.google.com/websearch/answer/86640">Google Help</a> for more information.<br/><br/><div style="text-align: center; border-top: 1px solid #dfdfdf;"><a href="https://www.google.com">Google Home</a></div></body></html>
Read from cache
Ready to serve...

```

Here is the downloaded file:



	UDPPingerClient.py	UDPPingerServer.py	ProxyServer.py	www.google.ca
1	HTTP/1.0 403 Forbidden			
2	Content-Length: 1103			
3	Content-Type: text/html; charset=UTF-8			
4	Date: Mon, 02 Nov 2015 01:46:57 GMT			
5	Server: GFE/2.0			
6				
7	<html><head><meta http-equiv="content-type" content="text/html; charset=utf-8"/><title>Sorry...</title><style> body { font-family: verdana, arial, sans-serif; background-color: #fff; color: #000; }</style></head><body><div><table><tr><td>Gooe</td><td style="text-align: left; vertical-align: bottom; padding-bottom: 15px; width: 50%"><div style="border-bottom: 1px solid #dfdfdf;">Sorry...</div></td></tr></table></div><div style="margin-left: 4em;"><h1>We're sorry...</h1><p>... but your computer or network may be sending automated queries. To protect our users, we can't process your request right now.</p></div><div style="margin-left: 4em;">See Google Help for more information. <div style="text-align: center; border-top: 1px solid #dfdfdf;">Google Home</div></body></html>			