Report

Task 1


```
telnet> ^C
swwind@ubuntu [130] % telnet cs144.keithw.org http
Trying 104.196.238.229 ...
Connected to cs144.keithw.org.
Escape character is '^]'.
GET /hello HTTP/1.1
Host: cs144.keithw.org
Connection: close

HTTP/1.1 200 OK
Date: Sat, 14 Sep 2024 11:26:29 GMT
Server: Apache
Last-Modified: Thu, 13 Dec 2018 15:45:29 GMT
ETag: "e-57ce93446cb64"
Accept-Ranges: bytes
Content-Length: 14
Connection: close
Content-Type: text/plain

Hello, CS144!
Connection closed by foreign host.
swwind@ubuntu [1] %
```

Task 2

```
swwind@ubuntu [130] % telnet smtp.qq.com smtp
Trying 120.232.69.34 ...
Connected to smtp.qq.com.
Escape character is '^]'.
220 newxmesmtplogicsvrsza29-0.qq.com XMail Esmtp QQ Mail Server.
helo qq.com
250-newxmesmtplogicsvrsza29-0.qq.com-21.26.149.118-79319647
250-SIZE 73400320
250 OK
auth login
334 VXNlcm5hbWU6
MjY3MDUyOTY0Nw==
334 UGFzc3dvcmQ6
235 Authentication successful
mail from:<2670529647@qq.com>
250 OK
rcpt to:<2670529647@qq.com>
250 OK
data
354 End data with <CR><LF>.<CR><LF>.
from:2670529647@qq.com
to:2670529647@qq.com
subject: lab0 test hope it works

if it not works i will blow tencent's mother
.
250 OK: queued as.
^]
telnet> quit
Connection closed.
swwind@ubuntu %
```

lab0 test hope it works ☆

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时　间：2024年9月14日 (星期六) 下午8：44

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if it not works i will blow tencent's mother


```
swwind@ubuntu % netcat -vlp 9090
Listening on log-upload.mihoyo.com 9090
Connection received on localhost 49342
hello from server!
hello from client!
```



```
swwind@ubuntu % telnet localhost 9090
Trying ::1 ...
Trying 127.0.0.1 ...
Connected to localhost.
Escape character is '^]'.
hello from server!
hello from client!
```

Task 3, 4

(a) Program structure and Design

Nothing much to elaborate here. Just the most simple code and it just runs.

As for ByteStream, we add `count_`, `done_` to save the current state and use `std::string buffer_` as the storage of the read/write stream. Functions are just implemented as-is.

(b) Implementation Challenges

The most challenging thing is to upgrade my ubuntu 22.04 to 24.04 and afterwards I can have the correct cmake version to compile the code! The lab is just about read the code and use the exisiting frameworks. Nothing hard to debug.

Btw, I prefer C more than C++.

(c) Remaining Bugs

No bugs remaining.

```
swwind@ubuntu (main)✕% cmake --build build --target check_webget
Test project /home/swwind/cs144/minnow/build
    Start 1: compile with bug-checkers
1/2 Test #1: compile with bug-checkers ........   Passed    0.23 sec
    Start 2: t_webget
2/2 Test #2: t_webget .......................   Passed    2.93 sec

100% tests passed, 0 tests failed out of 2

Total Test time (real) =   3.17 sec
Built target check_webget
swwind@ubuntu (main)✕%
```

(d) Experimental results and performance

3.22Gbps is the best I can make.

```
● swwind@ubuntu (main)✕% cmake --build build --target check0
 Test project /home/swwind/cs144/minnow/build
       Start  1: compile with bug-checkers
  1/10 Test  #1: compile with bug-checkers .......   Passed    0.21 sec
       Start  2: t_webget
  2/10 Test  #2: t_webget .......................   Passed    2.93 sec
       Start  3: byte_stream_basics
  3/10 Test  #3: byte_stream_basics .............   Passed    0.02 sec
       Start  4: byte_stream_capacity
  4/10 Test  #4: byte_stream_capacity ...........   Passed    0.01 sec
       Start  5: byte_stream_one_write
  5/10 Test  #5: byte_stream_one_write ..........   Passed    0.02 sec
       Start  6: byte_stream_two_writes
  6/10 Test  #6: byte_stream_two_writes .........   Passed    0.02 sec
       Start  7: byte_stream_many_writes
  7/10 Test  #7: byte_stream_many_writes ........   Passed    0.07 sec
       Start  8: byte_stream_stress_test
  8/10 Test  #8: byte_stream_stress_test ........   Passed    0.03 sec
       Start 37: compile with optimization
  9/10 Test #37: compile with optimization ......   Passed    0.14 sec
       Start 38: byte_stream_speed_test
              ByteStream throughput: 3.22 Gbit/s
 10/10 Test #38: byte_stream_speed_test .........   Passed    0.14 sec

 100% tests passed, 0 tests failed out of 10

 Total Test time (real) =   3.59 sec
 Built target check0
○ swwind@ubuntu (main)✕% █
```