

Assignment 2

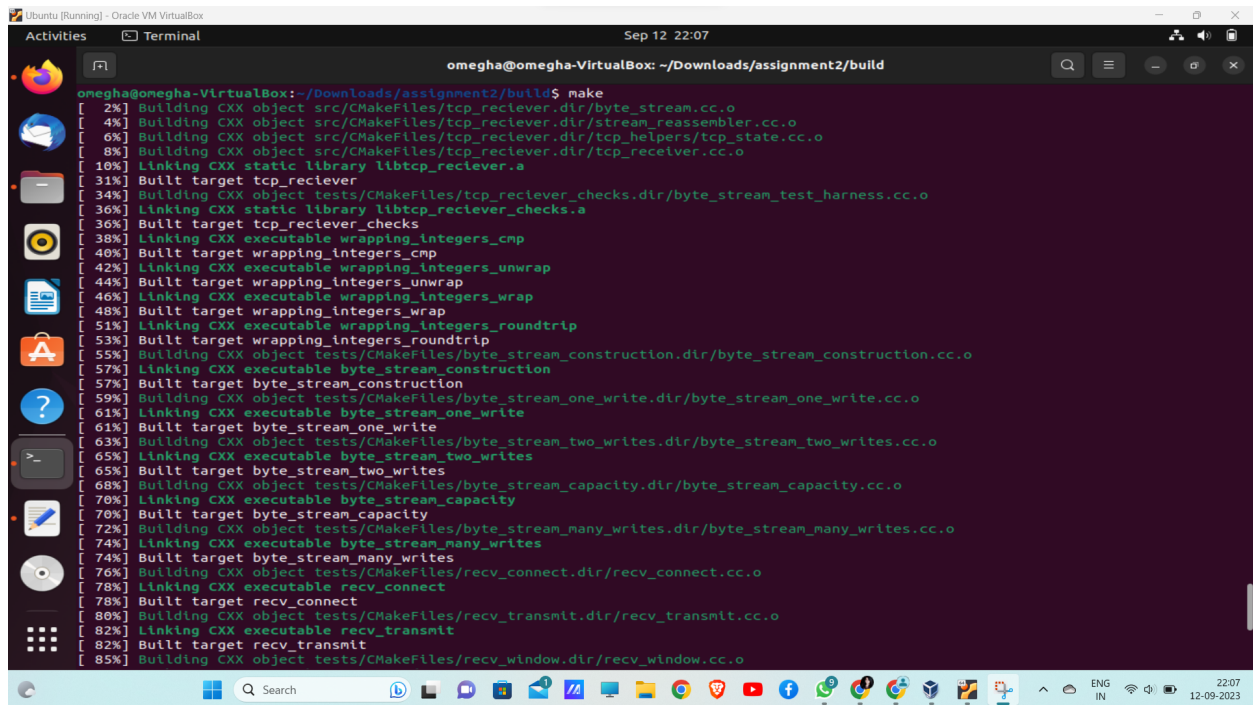
Report: Part I: Building ByteStream

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Created 'build' directly in the given directory assignment2 .

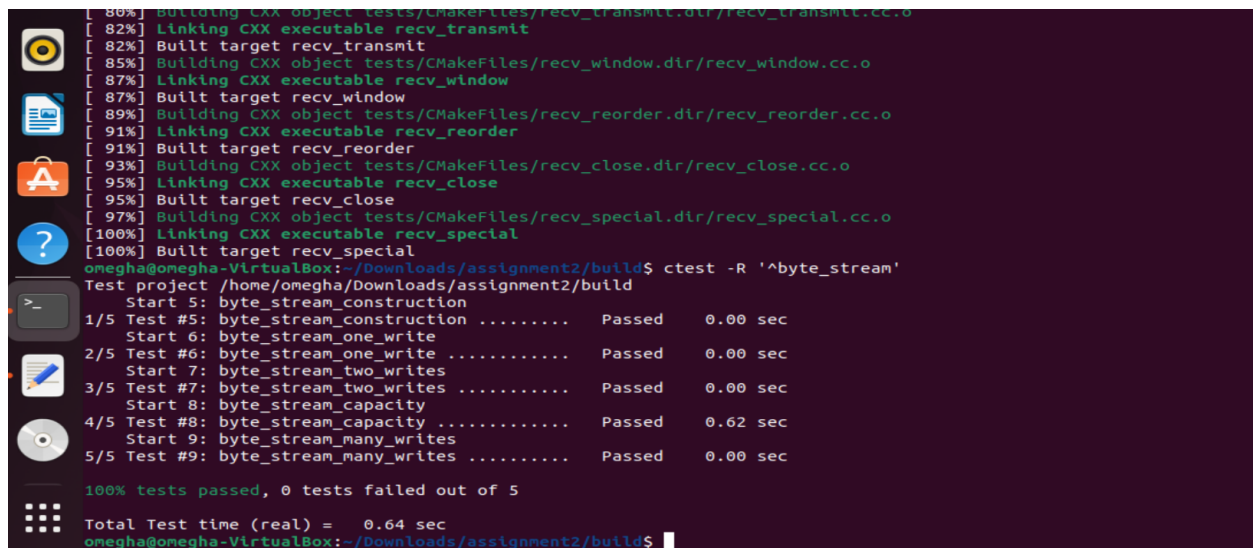
Run '**cmake ..**' To configure the project

In the build directly : I run '**make**' : To build the project.



```
omegha@omegha-VirtualBox: ~/Downloads/assignment2/build$ make
[ 2%] Building CXX object src/CMakeFiles/tcp_reciever.dir/byte_stream.cc.o
[ 4%] Building CXX object src/CMakeFiles/tcp_reciever.dir/stream_reassembler.cc.o
[ 6%] Building CXX object src/CMakeFiles/tcp_reciever.dir/tcp_helpers/tcp_state.cc.o
[ 8%] Building CXX object src/CMakeFiles/tcp_reciever.dir/tcp_reciever.cc.o
[10%] Linking CXX static library libtcp_reciever.a
[31%] Built target tcp_reciever
[34%] Building CXX object tests/CMakeFiles/tcp_reciever_checks.dir/byte_stream_test_harness.cc.o
[36%] Linking CXX static library libtcp_reciever_checks.a
[36%] Built target tcp_reciever_checks
[38%] Linking CXX executable wrapping_integers_cmp
[40%] Built target wrapping_integers_cmp
[42%] Linking CXX executable wrapping_integers_unwrap
[44%] Built target wrapping_integers_unwrap
[46%] Linking CXX executable wrapping_integers_wrap
[48%] Built target wrapping_integers_wrap
[51%] Linking CXX executable wrapping_integers_roundtrip
[53%] Built target wrapping_integers_roundtrip
[55%] Building CXX object tests/CMakeFiles/byte_stream_construction.dir/byte_stream_construction.cc.o
[57%] Linking CXX executable byte_stream_construction
[57%] Built target byte_stream_construction
[59%] Building CXX object tests/CMakeFiles/byte_stream_one_write.dir/byte_stream_one_write.cc.o
[61%] Linking CXX executable byte_stream_one_write
[61%] Built target byte_stream_one_write
[63%] Building CXX object tests/CMakeFiles/byte_stream_two_writes.dir/byte_stream_two_writes.cc.o
[65%] Linking CXX executable byte_stream_two_writes
[65%] Built target byte_stream_two_writes
[68%] Building CXX object tests/CMakeFiles/byte_stream_capacity.dir/byte_stream_capacity.cc.o
[70%] Linking CXX executable byte_stream_capacity
[70%] Built target byte_stream_capacity
[72%] Building CXX object tests/CMakeFiles/byte_stream_many_writes.dir/byte_stream_many_writes.cc.o
[74%] Linking CXX executable byte_stream_many_writes
[74%] Built target byte_stream_many_writes
[76%] Building CXX object tests/CMakeFiles/recv_connect.dir/recv_connect.cc.o
[78%] Linking CXX executable recv_connect
[78%] Built target recv_connect
[80%] Building CXX object tests/CMakeFiles/recv_transmit.dir/recv_transmit.cc.o
[82%] Linking CXX executable recv_transmit
[82%] Built target recv_transmit
[85%] Building CXX object tests/CMakeFiles/recv_window.dir/recv_window.cc.o
```

Run : **ctest -R '^byte_stream'** : to run all the tests associated with byte_stream.



```
omegha@omegha-VirtualBox: ~/Downloads/assignment2/build$ ctest -R '^byte_stream'
Test project /home/omegha/Downloads/assignment2/build
  Start 5: byte_stream_construction
1/5 Test #5: byte_stream_construction ..... Passed    0.00 sec
  Start 6: byte_stream_one_write
2/5 Test #6: byte_stream_one_write ..... Passed    0.00 sec
  Start 7: byte_stream_two_writes
3/5 Test #7: byte_stream_two_writes ..... Passed    0.00 sec
  Start 8: byte_stream_capacity
4/5 Test #8: byte_stream_capacity ..... Passed    0.62 sec
  Start 9: byte_stream_many_writes
5/5 Test #9: byte_stream_many_writes ..... Passed    0.00 sec

100% tests passed, 0 tests failed out of 5

Total Test time (real) =  0.64 sec
omegha@omegha-VirtualBox: ~/Downloads/assignment2/build$
```

Code snippet : Here I completed all the methods, to build the byte stream :

Capacity (buffer_s size), end (flag) , bytes_Write ,bytes_Read and buffer_s(our data structure that will contain all the bytes) are defined in the **private** section of the **class ByteStream** in .hh file

```
12
13 using namespace std;
14
15 ByteStream::ByteStream(const size_t capa)
16 {
17     capacity=capa;
18     end=false;
19     bytes_Write=0;
20     bytes_Read=0;
21 }
22 size_t ByteStream::write(const string &data) {
23     if(input_ended() || _error){
24         return 0;
25     }
26     int written=0;
27     for(char Byte : data){
28         if(buffer_s.size()<capacity){
29             buffer_s.push_back(Byte);
30             written++;
31             bytes_Write++;}
32         //else{
33         //return 0;}
34     }
35     return written;
36 }
37
38
39 /// \param[in] len bytes will be copied from the output side of the buffer
40 string ByteStream::peek_output(const size_t len) const {
41     size_t i=min(len,buffer_s.size());
42     string copy_output;
43     for(size_t j=0;j<i ; j++){
44         copy_output+= buffer_s[j];
45     }
46     return copy_output;
47 }
48
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64 std::string ByteStream::read(const size_t len) {
65     string output_read;
66     if(len> buffer_s.size()){
67         set_error();}
68     output_read=peek_output(len);
69     pop_output(len);
70     return output_read;
71 }
72
73 void ByteStream::end_input() {
74     end=true;
75 }
76
77 bool ByteStream::input_ended() const { return end;}
78
79 size_t ByteStream::buffer_size() const {return buffer_s.size(); }
80
81 bool ByteStream::buffer_empty() const {return buffer_s.empty(); }
82
83 bool ByteStream::eof() const {
84     return input_ended() && buffer_empty(); }
```