

Report for KENS1

Team #12

Name & ID: Shyngys Aitkazinov 20170848

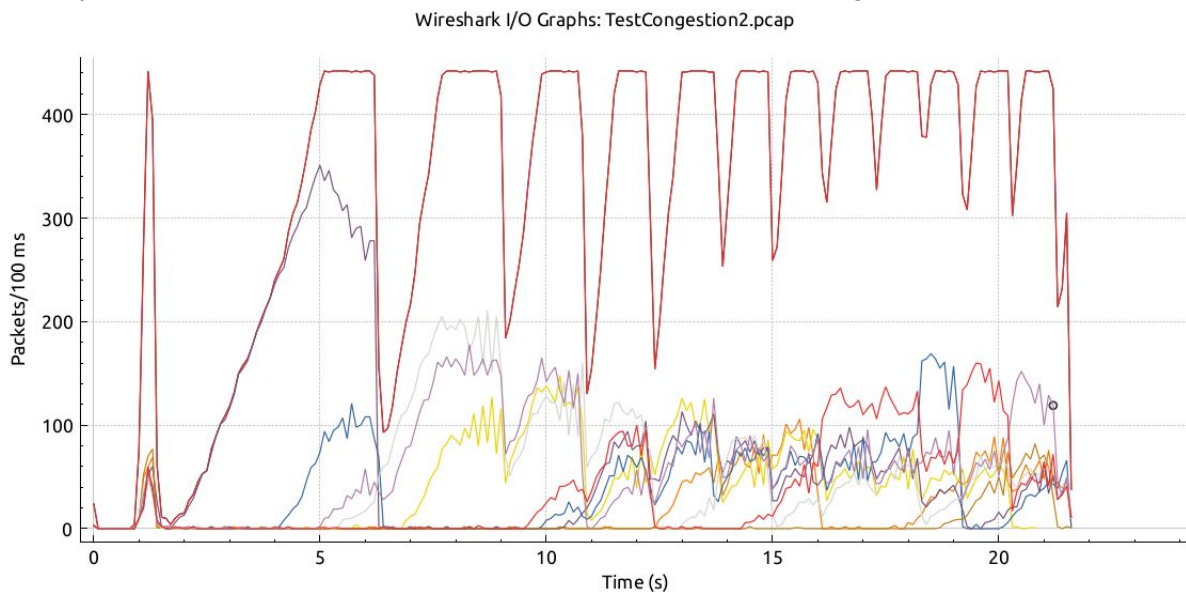
Name & ID: Yerbolat Koptleuov 20170876

Part1. Wireshark

We opened the TestCongestion2.pcap and obtained the I/O graph.

Setting the time resolution to 100ms and adding filters by the ip for each endhost in the simulation of communication process we obtained the following graph.

Display filters were in this format ip.addr == 10.0.1.1x where x ranged from 0 to 7.



(the saved pdf file will be attached in the end of the report)

Part2. TCPAssignment

We created the kensocket.cpp and kensocket.hpp files to add our own class kensocket which maintains the information about opened sockets and binded sockets using several data structures such as maps and sets.

We defined some useful functions to for the convenient implementation of the bind() and getsockname(); These are their prototypes:

```
k_set_itr find_by_fd(int fd, k_set_type set_type);  
k_set_itr find(kensockaddr k_addr, k_set_type set_type);  
void insert(kensockaddr k_addr, k_set_type set_type);  
void erase(k_set_itr itr, k_set_type set_type);  
k_set_itr end(k_set_type set_type);
```

Their names define their functionality so that we can maintain information about binded and unbinded sockets, therefore we have variable k_set_type which represents different sets for binded and unbinded sockets in turn.

Briefly about our implementation, we keep track about open sockets and and binded sockets in 2 sets called:

```
allocated_addrs  
unallocated_addrs
```

When the socket is opened via socket system call we add corresponding file descriptor in `unallocated_addrs`, if it is binded the socket should move from the `unallocated_addrs` to the `allocated_addrs` (erase and insert functions are quite useful for this).

For the error correction and overlapping checking the `find()` and `find_by_fd()` functions are useful.

`getsockname()` function uses the stored information in our sets to obtain corresponding required information about socket.

For more details for the implementation, I recommend to refer to the source code.

Wireshark I/O Graphs: TestCongestion2.pcap

