Computer network
Assignment 2

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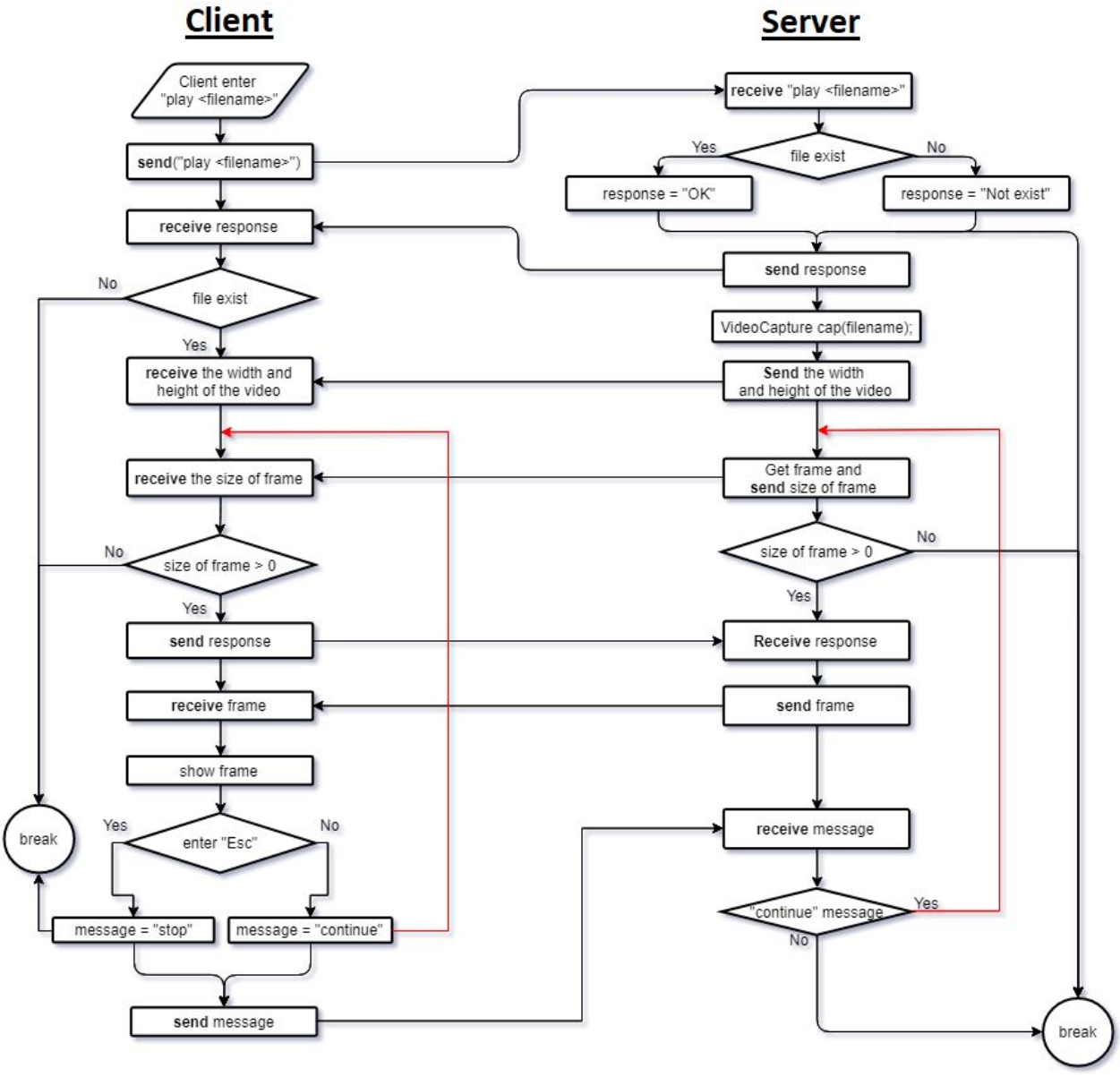
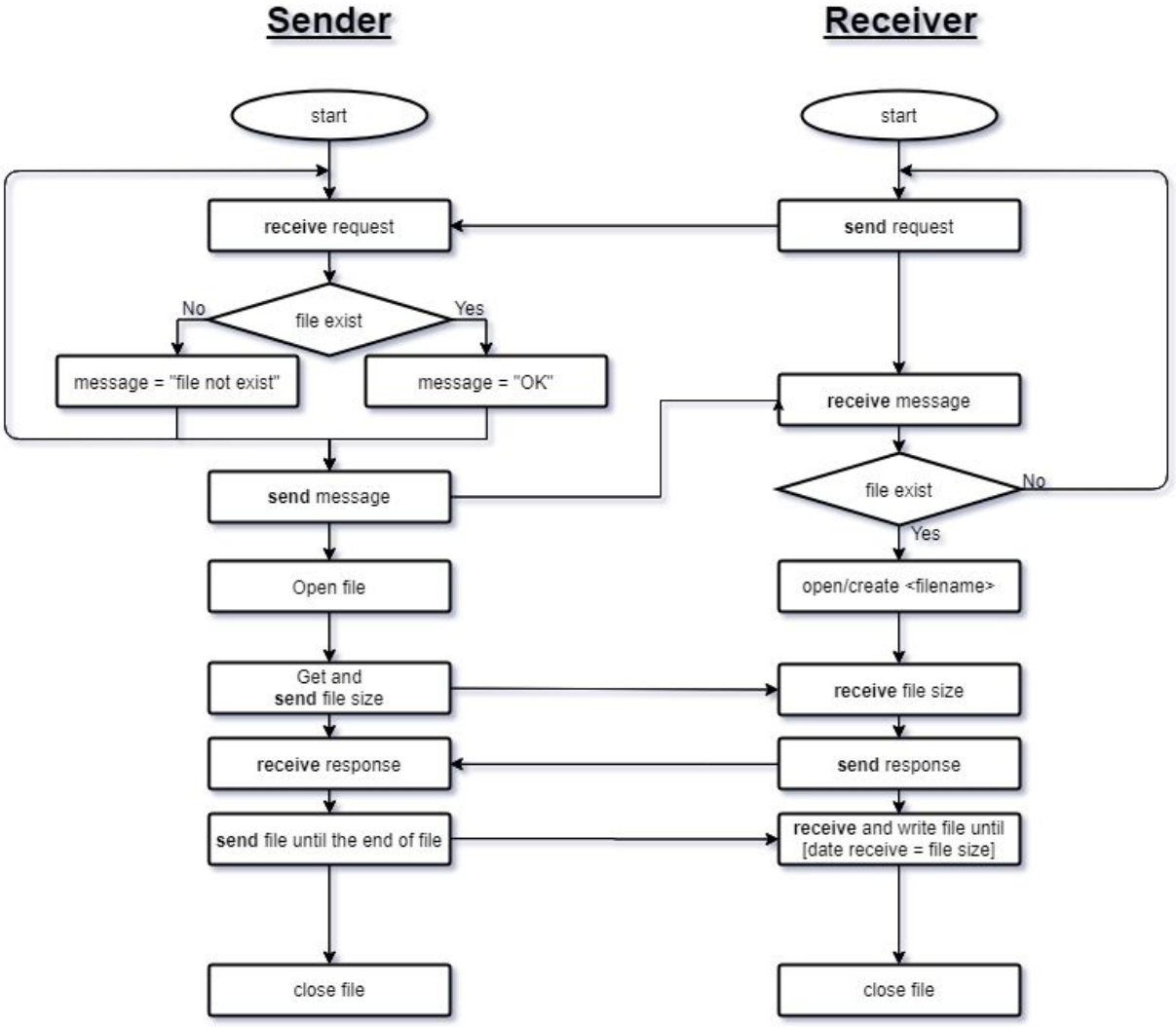
1. **Draw a flowchart of the video streaming and explain how it works in detail.**



2. **Draw a flowchart of the file transferring and explain how it works in detail.**



3. **What is SIGPIPE? Is it possible to happen to your code? If so, how do you handle it?**
   When a process tries to write to a pipe/socket where the read end of pipe/socket is closed, a SIGPIPE signal is produced. SIGPIPE signal terminates the process.

   It is possible to happen to my code since the socket of the server/client may be closed when the process crashes unexpectedly or closed by the user. The SIGPIPE signal by thread A will terminate thread B and it shouldn't happen in this server/client model.

   To handle SIGPIPE signals, I decided to ignore the SIGPIPE signal to prevent the process terminated by SIGPIPE.

```
signal(SIGPIPE, SIG_IGN);
```

4. **Is blocking I/O equal to synchronized I/O? Please give me some examples to explain it.**
   No, blocking I/O means that a thread is **in a wait state** after an I/O request, until it receives the reply of the request.
   Synchronized I/O means **a form of I/O processing** that a thread waits/pauses after sending a request, until it receives the result of the request.
   To conclude, a synchronous I/O may be blocking or non-blocking. A blocking I/O must be synchronous I/O.
   For example, read/write is a synchronous blocking I/O. Read/write with O_NONBLOCK is a synchronous non-blocking I/O. And select/poll using in assignment 2 is an asynchronous blocking I/O.

Reference:

1. ***select() example***
   https://www.gnu.org/software/libc/manual/html_node/Server-Example.html
2. ***create a directory with checking existence of directory***
   https://stackoverflow.com/questions/7430248/creating-a-new-directory-in-c
3. ***list file in a directory***
   https://www.sanfoundry.com/c-program-list-files-directory/
4. ***recv() tracking***
   https://stackoverflow.com/questions/30655002/socket-programming-recv-is-not-receiving-data-correctly
5. ***compare the end of a string***
   https://stackoverflow.com/questions/744766/how-to-compare-ends-of-strings-in-c
6. ***SIGPIPE***
   https://www.quora.com/What-are-SIGPIPEs
   http://senlinzhan.github.io/2017/03/02/sigpipe/
7. ***blocking and synchronized I/O***
   https://stackoverflow.com/questions/8416874/whats-the-differences-between-blocking-with-synchronous-nonblocking-and-asynch
   https://rickhw.github.io/2019/02/27/ComputerScience/IO-Models/
   https://medium.com/@clu1022/%E6%B7%BA%E8%AB%87i-o-model-32da09c619e6