CS 375 - UNIX System Programming
Fall 2018 – Programming Project 6

Assignment

Write a network server named **shoutd.cpp** that reads ASCII messages from a client, converts them to upper case and sends them back to the client. The messages may be of arbitrary length and should be terminated with a null byte. The server should bind to all local IP addresses and a dynamically assigned port number. The server should display the assigned port number to standard output when it starts. The server should be capable of handling multiple simultaneous clients and must use I/O multiplexing to do so (**select()**).

The server should use **getaddrinfo()** to form the address that is passed to bind() and should use **getnameinfo()** to determine the dynamically assigned port number.

Write a client named **shout.cpp** that takes the server hostname and port number as arguments (the client should also accept an IPV4 address in dotted quad notation in place of the hostname).   It should use **getaddrinfo()** to convert the arguments to a connection address. The client should prompt the user for an input and output file name pairs. The client opens the input file, sends the contents to the **shoutd** server and writes the returned data from the server to the output file.   The client should then prompt the user for another input and output file name pair. The connection to the server should be terminated when the user closes standard input (CTRL-D at the terminal). A typical run of the client might look something like this (assuming the server is running on csserver):

```
 > shout   csserver.evansville.edu    43100
Enter input and output file names:  timid.txt   loud.txt
Conversion is complete.
Enter input and output file names:  ^D
>
```

What to submit

- Provide a makefile named **Makefile** that will make both programs for this assignment as the default target (typically called **all**). Each program must be a separate target.
- Create a tarfile or zipfile containing your program source files and makefile.
- Submit your archive using the submission system (http://submission.evansville.edu).