Lab 4 Documentation

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For this lab, in the tar file you will find the folder for lab4 the changed files include the following:

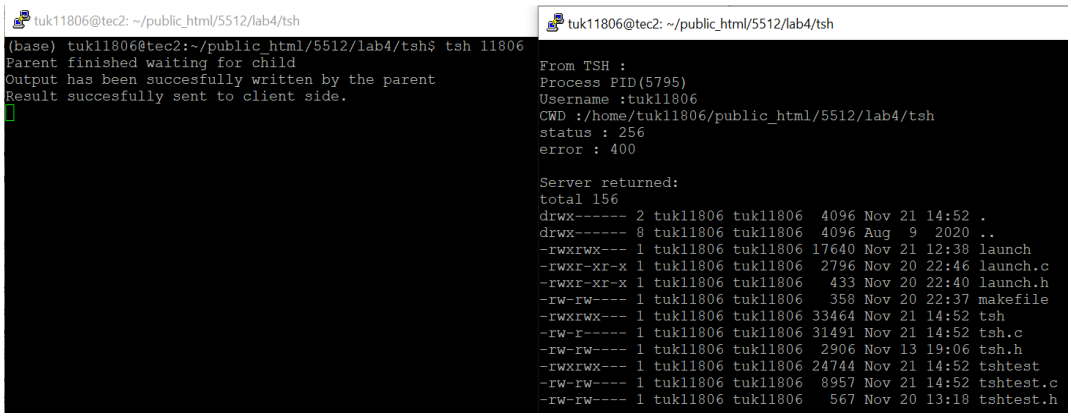
Tsh folder:
tsh.c renamed to lab4.c
tshtest.c renamed to lab4test.c
changes to tsh.h, tshtest.h
changes to makefile
Include folder:
changes to synergy.h

Running without launch:

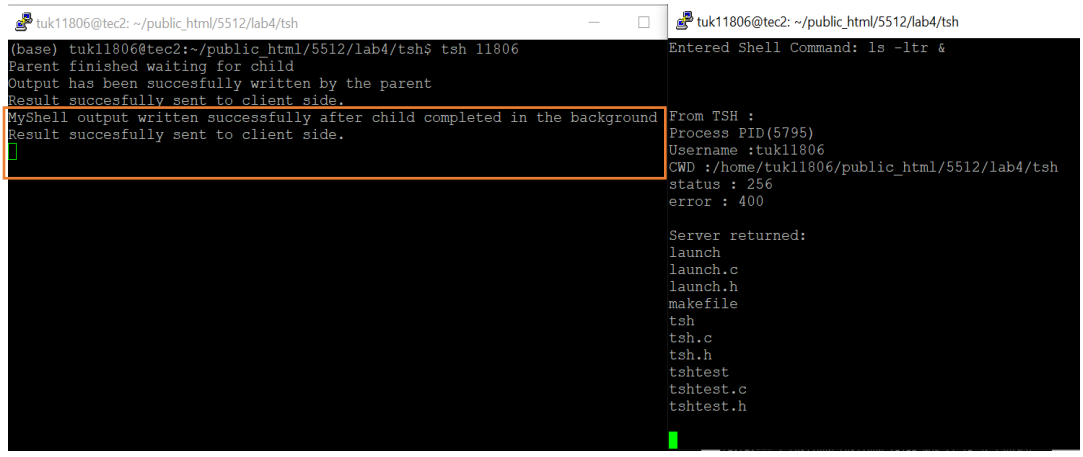
To run this lab, we start by cd to tsh folder, then running the command tsh 11806. Next, we run the client in a new session using the command tshtest 11806.

I experimented with the following commands and will be showing sample output:

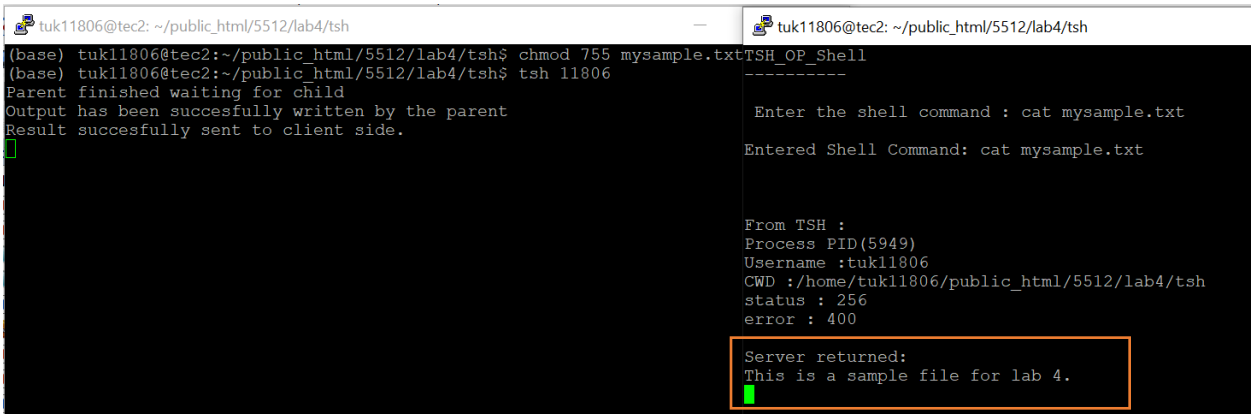
1. **ls -al (foreground)**



2. **ls -ltr & (background) (don't forget the space before the &)**



3. Cat mysample.txt (foreground)



Thoughts:

It took me a long time to even understand what needs to be done or how the communication is happening, it took a lot of googling to understand the main idea and also watching the ponpoto recordings.

A shell job running in the background sends its output to standard output, so in order for us to have it not interfere with the foreground output. I used pipes such that the child output if it's a background process is routed to into a pipe using dup2. It is then possible for the parent process to read the output of the child process from file descriptor filedes[0].

Signaling is used when a program is running in the foreground and the parent is waiting for the child to finish.

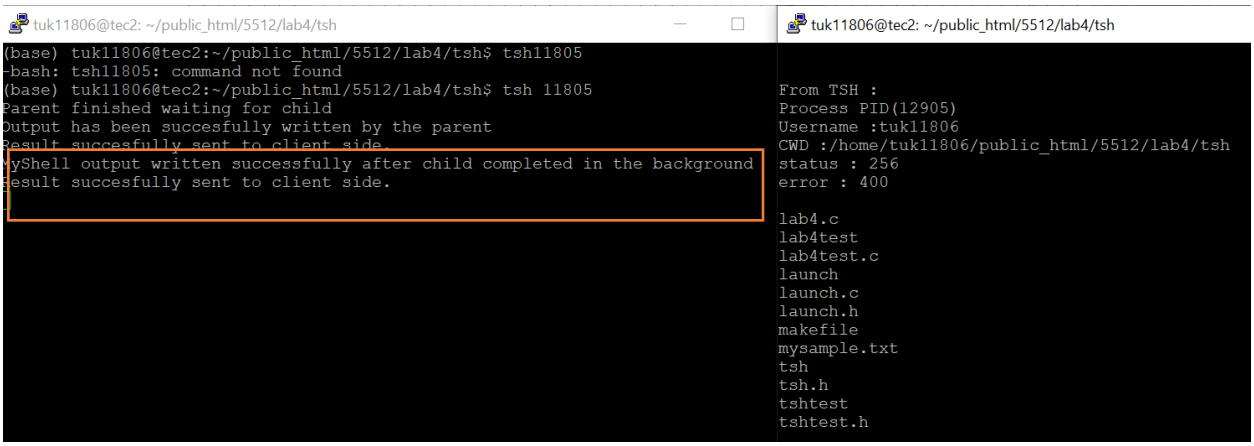
The whole concept of syncing my read/writes in both client and server was not clear to me in the beginning which led to very wacky results in the beginning but eventually resolved.

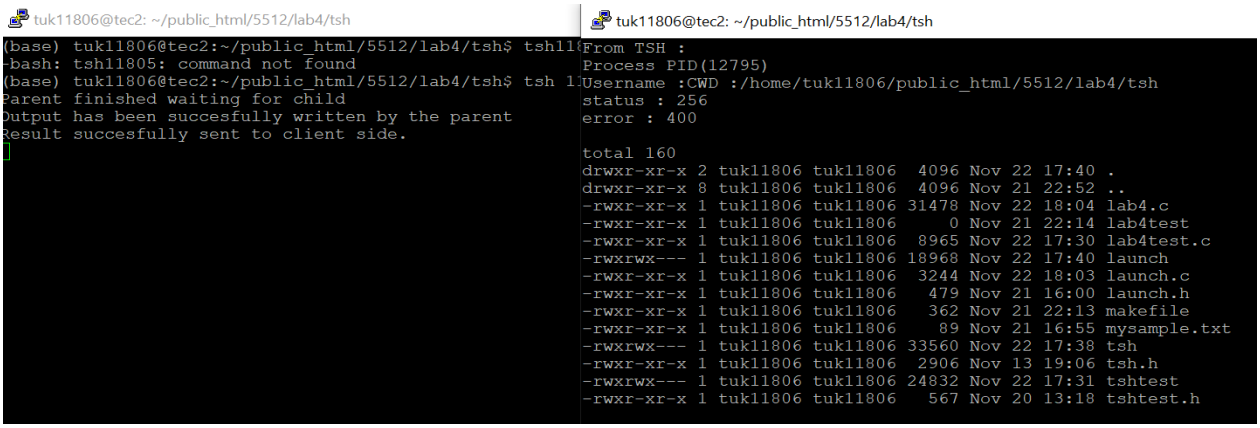
I also saw an issue with using the out_buffer to send the server results to the client, especially if we have large results as a solution, I just increased the size to 100000 now but I'm sure there is a more efficient way.

Additionally, I did not understand initially the idea behind launch and overcomplicated the task so I wasted a lot of time on that until I finally understood that we are simply passing the command to the server and the server handles the rest.

Running with launch.c :

Launch.c serves as a wrapper to remotely execute the code. To run it we start with tsh 11806 on the server side, then launch 11806 on the client side, you will be promoted to enter a command whether its fg or bg, and the results will be displayed. Below is sample output.


tuk11806@tec2: ~/public_html/5512/lab4/tsh
(base) tuk11806@tec2:~/public_html/5512/lab4/tsh$ tsh11805
-bash: tsh11805: command not found
(base) tuk11806@tec2:~/public_html/5512/lab4/tsh$ tsh 11805
Parent finished waiting for child
Output has been succesfully written by the parent
Result succesfully sent to client side.
MyShell output written successfully after child completed in the background
Result succesfully sent to client side.
tuk11806@tec2: ~/public_html/5512/lab4/tsh
From TSH :
Process PID(12905)
Username :tuk11806
CWD :/home/tuk11806/public_html/5512/lab4/tsh
status : 256
error : 400
lab4.c
lab4test
lab4test.c
launch
launch.c
launch.h
makefile
mysample.txt
tsh
tsh.h
tshtest
tshtest.h


tuk11806@tec2: ~/public_html/5512/lab4/tsh
(base) tuk11806@tec2:~/public_html/5512/lab4/tsh$ tsh11
-bash: tsh11805: command not found
(base) tuk11806@tec2:~/public_html/5512/lab4/tsh$ tsh 1
Parent finished waiting for child
Output has been succesfully written by the parent
Result succesfully sent to client side.
tuk11806@tec2: ~/public_html/5512/lab4/tsh
From TSH :
Process PID(12795)
Username :CWD :/home/tuk11806/public_html/5512/lab4/tsh
status : 256
error : 400
total 160
drwxr-xr-x 2 tuk11806 tuk11806 4096 Nov 22 17:40 .
drwxr-xr-x 8 tuk11806 tuk11806 4096 Nov 21 22:52 ..
-rwxr-xr-x 1 tuk11806 tuk11806 31478 Nov 22 18:04 lab4.c
-rwxr-xr-x 1 tuk11806 tuk11806 0 Nov 21 22:14 lab4test
-rwxr-xr-x 1 tuk11806 tuk11806 8965 Nov 22 17:30 lab4test.c
-rwxrwx--- 1 tuk11806 tuk11806 18968 Nov 22 17:40 launch
-rwxr-xr-x 1 tuk11806 tuk11806 3244 Nov 22 18:03 launch.c
-rwxr-xr-x 1 tuk11806 tuk11806 479 Nov 21 16:00 launch.h
-rwxr-xr-x 1 tuk11806 tuk11806 362 Nov 21 22:13 makefile
-rwxr-xr-x 1 tuk11806 tuk11806 89 Nov 21 16:55 mysample.txt
-rwxrwx--- 1 tuk11806 tuk11806 33560 Nov 22 17:38 tsh
-rwxr-xr-x 1 tuk11806 tuk11806 2906 Nov 13 19:06 tsh.h
-rwxrwx--- 1 tuk11806 tuk11806 24832 Nov 22 17:31 tshtest
-rwxr-xr-x 1 tuk11806 tuk11806 567 Nov 20 13:18 tshtest.h