## Homework 7

## Overview

This project was to extend our command line interpreter from homework 3 to have new functionality using symbols to redirect and/or append stdout, stdin, and stderr streams to or from files. Then we were to implement a pipe between two process and redirect their standard streams to the pipe handles. To create the background process, I simply made a if statement that skips the wait() function if background boolean variables equals true. I used the method from John to omit the symbols from the argy array before the fork(), and use them only to switch the modes. File redirections were achieved through dup2. For the pipe, I made one pipe and passed in two file descriptors. I forked another process in the child process, connected the streams to the pipe using dup2, and closed the redirected pipes.

## **Testing**

Tested file redirections all with hw7.txt file on my computer. Streams redirected to and from text files and used cat to show contents. Appended versions also showed appended contents. I tried closing the original streams after or before I redirected them in the child process, but I was getting BAD FILE DESCRIPTOR error. Without the close, they seemed to work fine. Background process seemed to work fine. And the pipe works, but very buggy. Pic shows I used cat on the same file in both processes, and it seemed to work because I saw the file contents twice where the contents of the file contained the output from the shell, but there is a bug where the cat tries to read in an invalid argument somewhere in the array during the nested process. **CONTENTS OF TEXT FILE changed to contents of shell after** 

I kept testing.

```
Terminal - nikko@boobee ~/Desktop/Compsci
 File Edit View Terminal Tabs Help
nikko@boobee ~ $ cd Desktop
nikko@boobee ~ $ cd Desktop
nikko@boobee ~/Desktop $ cd Compsci
nikko@boobee ~/Desktop/Compsci $ gcc -Wall hw7.c -o hw7.o
nikko@boobee ~/Desktop/Compsci $ ./hw7.o
alexShell ~ $ cp test.c AAAAAAAAAAAAAA.c &
### WAIT() omitted
### Background process running
alexShell ~ $ ls
### Child exited
alexShell ~ $ 00000.c
                                                    copy_files
hw7 help
hw7.o
                                                                                                   test
000.c
                             copy.html
                                                                            test4.c
                             eteit.c
                                                                            test.c
                             hw2writeup.odt
1111.c
                                                                            testnew.c
                                                     john
                             hw2writeup.pdf
                                                     john.c
                                                                            test.o
                                                                            testwiegneig.c
AAAAAAAAAAAAAAA.c
                                                     kiwenfiwtest.c
```

```
alexShell ~ $ grep 7 < hw7.txt
hw7.txt
### Child exited
alexShell ~ $ ls >> hw7.txt
### Child exited
alexShell ~ $ cat hw7.txt
hw7.txt
                         alexShell ~ $ cat hw7.txt | cat hw7.txt
### Child exited
                         ### Child exited
alexShell ~ $ ====:
                         alexShell
                                             TYPE IN COMMANDS
alexShell ~ $ ====alexShell
                                      cat: cat: No such file or directory
### Child exited
                         hw7.txt
                         ### Child exited
alexShell ~ $
                         alexShell ~ $ ======TYPE IN COMMANDS=====
                         ### Child exited
                         alexShell ~ $ hw7.txt
                         ### Child exited
                         alexShell ~ $ ------TYPE IN COMMANDS-------
alexShell ~ $ cat: cat: No such file or directory
                          nw7.txt
                         ### Child exited
                                            ==TYPE IN COMMANDS==
```