PA1 Project Description

man ls | grep -m 1 -A 1 -e '-d'

The command you see above is the command I wanted to create using pipes, wait, execv and so on.

LS command is used to list files in the current directory. It is short for “list”. It is one of the most used commands in Linux system. I wanted to choose ls command because I use this command a lot in my assignments and projects to go around the directories and files and see them properly.

I also wanted to use “-d” because I really liked the fact that I can see just the directories I want to see. It always gets messy seeing all the things and this really makes it easy for me to understand the hierarchy.

Program Hierarchy

In the program, I am using 1 a option. My man, shell and grep commands all have parent-child relationship between them. Core shell process is the parent, grep process is the child and lastly man process is the grandchild. Grep process waits for man process to finish and shell waits for grep to finish.

Man and grep run concurrently because man process writes its output to pipe and grep process reads from that pipe and writes to output.txt. This parallel execution allows them to run simultaneously.

Firstly shell process forks and if it succeeds, then another forking is done. This allows us to create man process which will help us to call “man ls” command. Then when it’s done, grep command reads the outputs of this command from the pipe and executes “grep –m 1 –A 1 –e ‘-d’” commands. I used –m because I only need one “-d” occurrence in the file and it must be the specific one we wanted. I used –A 1 because I only wanted to display 1 line after the first “-d” grep since man ls output only has 1 line of description inside “-d” command. Lastly “-e” allowed me to specify that “-d” is the search pattern I wanted to investigate and not an option.

After all execution and with the ending of all processes, you can see the wanted “-d” inside output.txt and desired terminal outputs –which are IDs of the processes and their commands- in the terminal. Output.txt also matches with the output when you call “man ls | grep -m 1 -A 1 -e '-d'” through terminal.