Program Report

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Ls command lists files I the current directory. -Z option is for printing any security content of each file. I picked this command and option because when we start to learn Linux one the first thing we learn and mostly use is the “ls” command, so I wanted to examine and study on this command. And I chose –Z option since I am into security and seeing each files security content got me excited.

To explain the codes process hierarchy let me start from the beginning. Firstly, I created a fd which will be my file directory. Next, we used pipe(fd) to make it a pipe. Also while making a pipe we check if there was any error if error the could will be terminated. Then the shell prints its it. Next we create a child with fork() from the main parent. The child is pid1. Pid1 is checked if there is any error if not then we print its id. Then dup2 function is used to duplicate the fd[1] from STDOUT_FILENO and also fd[0] the pipes read is closed so one way of the pipe is closed leaving fd[1]. Next we create a pointer which points to the command (man) and an pointer array to list the variables we will use. We use man and ls so we put them in the newly created array. And then with using execvp we execute the command man ls.

Secondly, after the execution of pid1’s execvp we then fork another child from the main parent called pid2. We check if there is any error if not we continue. This time before we start in are else if we check if we are the child of main parent not the child of pid1. So to go in the else if the pid2 must be a child of the main parent. Next we print the the pid of pid2. And we duplicate fd[0] from STDIN_FILENO. Also we close the pipes both ends. Next we have a pointer to point to the command grep. And array to containt all the stuff we will use as commands and their options. So now in the array we have grep the main command, then we have –after-context which is also known as –A and after it we have 1 this allows us to print the selected line and line below once we use pipe. Next we have –e which allows us to search with – and lastly –Z which is the option of ls command. Aftet this array is created then we open a new output.txt to put the result which we will find. And in the if statement we duplicate STDOUT_FILENO in to output.txt and if no error execvp is executed with the command from the array then put into the output.txt.

Finally, in the end of the program for no confusion or problem we close both the sides of the pipe. And also wait for pid1 and pid2 to be both finished. And then we printf the shells pid again. So this is the program hierarchy of my homework one.