

CSE 451 Problem Set #1

Due: 12:30pm, Thursday, October 4, 2012

As a warmup for the class and as a review for the material in CSE 333, write a (very) simple linux shell in C capable of executing a sequence of programs that communicate through a pipe. For example, if the user types `ls | wc`, your program should fork off the two programs, which together will calculate the # of files in the directory. For this assignment, you will need to use some of the following linux system calls: *fork*, *execve*, *open*, *close*, *pipe*, *dup2*, and *wait*. It is important to note that these system calls have subtly different semantics than thread `fork` and `wait` which we'll cover in a few weeks. The textbook discusses these differences in Chapter 3; another resource is the linux man pages. One tricky step concerns how to replace standard in and out (file descriptors 0 and 1); this is the role of *dup2*. Please add enough comments so that the TA can understand your design. Note that you should be able to run your shell on your operating system in a few weeks, but for now, you can test it on linux.