

CSCI 315 Lab 1 Exercise

January 27, 2010

The `fork` command is fundamental to the use and operation of the UNIX operating system. It is used by UNIX when you login to create your execution environment, i.e., shell process, and by the shell when you execute a shell command (e.g., `'ls'`). In this lab you will experiment with the `fork` command to uncover some of its interesting properties.

References UNIX `man` page for the `fork`.

Pre-Lab There is no required prelab for this week's lab. Those who would like to get a jump on the lab work, however, can type the program on the next page into a file named `fork.cc`, compile, and run it. Bring a copy of the program and a sample output from the program to hand in at the beginning of lab.

Study the text (Section 3.3.1) to understand this segment of code.

Compiling and Running C++ Programs: To compile a C++ program, use the program `g++`. Type the following at the command prompt:

```
g++ fork.cc -o fork
```

The flag `'-o'` tells the compiler to put the executable in a file named `fork`. If you left off `'-o fork'`, the executable would be put in a file named `a.out`.

To run your program, type the name of the executable at the command prompt. If you compiled your program as described above, you would just type the name `fork` at the command prompt.

```

using namespace std;

#include <sys/types.h>
#include <sys/wait.h>
#include <unistd.h>
#include <iostream>

void Count(int start, char ch);

int main(int argc, char *argv[])
{
    int pid;
    int start = 0;

    pid=fork();
    if (pid > 0) { /* parent continues here */
        Count(start, 'P');
        wait(NULL); // To get all printing done before shell prompt shows
    }
    else if (pid == 0) { /* child got here! */
        Count(start, 'C');
    }
    else /* only if there was a problem with fork */
        exit(-1);
    cout << endl;
}

void Count(int start, char ch)
{
    int i, j;
    for (i = start; i < 10; i++) {
        for (j = 0; j < 1000000; j++) ;
        cout << endl << ch << ": " << i;
    }
}

```

Lab Problem Work through the fork tutorial.

Hand in: Hand in the answers and program code as specified in the tutorial by next Monday.