Georgia State University

CSc 4320/6320 Operating Systems

Spring 2018

Programming Assignment 1

Due Time: 11:59 PM, February 4

Objective:

To understand and experiment with process creation in Linux.

Problem Statement:

Write a C program that meets the requirement in Programming Problem 3.21 in the textbook. In addition, your program should also display the process IDs of both the parent and child processes. Follow the code in Figure 3.34 to print the process IDs.

Steps:

- Download the incomplete source file *hw1.c* from iCollege. The incomplete code obtains the input value (starting number of Collatz sequence) and assigns it to variable *n*.
- Complete the code
- Compile the C source file using gcc (see screenshot 1 below)
- Take a screenshot of the program output (see screenshot 2 below as a sample output). The output of your program should have the same structure as in the sample screenshot, but can have different test numbers. (*Failure to follow the output structure will cause 10% deduction in the score*)

Submission:

Submit the following to iCollege:

- The C source file *hw1.c*
- A report in PDF or Word that includes (1) the screenshot of your program output and (2) a copy of your C source code from *hw1.c* file

Failure to follow the submission requirement will cause 10% deduction in the score.

```
zhisheng@zhisheng-ubuntu:~/Desktop/4320/hw1$ ls
hw1.c
zhisheng@zhisheng-ubuntu:~/Desktop/4320/hw1$ gcc -o hw1 hw1.c
zhisheng@zhisheng-ubuntu:~/Desktop/4320/hw1$ ls
hw1  hw1.c
```

Screenshot 1

```
zhisheng@zhisheng-ubuntu:~/Desktop/4320/hw1$ ./hw1 1
1,
child: pid=0
child: pid1=1607
parent: pid=1607
parent: pid1=1606
zhisheng@zhisheng-ubuntu:~/Desktop/4320/hw1$ ./hw1 8
8, 4, 2, 1,
child: pid=0
child: pid1=1609
parent: pid=1609
parent: pid1=1608
zhisheng@zhisheng-ubuntu:~/Desktop/4320/hw1$ ./hw1 8
8, 4, 2, 1,
child: pid=0
child: pid1=1611
parent: pid=1611
parent: pid1=1610
zhisheng@zhisheng-ubuntu:~/Desktop/4320/hw1$ ./hw1 35
35, 106, 53, 160, 80, 40, 20, 10, 5, 16, 8, 4, 2, 1,
child: pid=0
child: pid1=1613
parent: pid=1613
parent: pid1=1612
```

Screenshot 2