CSE 7343 - Operating Systems and System Software

Assignment #1
Due Date: 1/22/2009

Preparation

Work through a C tutorial (e.g., http://www.le.ac.uk/cc/tutorials/c/) to brush up your programming skills.

Text Book Problems

Answer review questions (optional): 1.1, 1.4, 2.3, 2.5, 3.4, 3.10
Solve problems: 1.4, 1.8, 2.1,.2.3, 3.1, 3.3

Programming Assignment: Process creation and signal handling

Goal: The goal of this program is to help you understand the process management concepts in UNIX and learn to use the following system calls:

- *fork()*: process creation
- *exec()*: replacing a process with another program
- *kill()*: sending a signal to a process
- *signal()*: registering/installing signal catch routines

Program Description:
Write two programs, called P1 and C1. P1 first creates a child process for C1 using *fork()* and *exec()* system calls. After that, P1 continuously sends the SIGALARM signal to C1. The child process counts the number of SIGALARM signals received from its parent. Upon reaching a specified number, which is given as an argument in the *exec()* call, the child process reports the signal count and terminates itself. After noticing its child termination, the parent should report the status of child process before it terminates itself. Hint: when a child dies, the parent process receives SIGCHLD signal.

Helpful information:

- http://users.actcom.co.il/~choo/lupg/tutorials/index.html
- http://users.actcom.co.il/~choo/lupg/tutorials/multi-process/multi-process.html
- http://users.actcom.co.il/~choo/lupg/tutorials/signals/signals-programming.html