Signal4 Demonstration

Files

The files for this demonstration can be found in the rlogin cluster in the directory

`/web/courses/cs3214/spring2014/butta/examples/signal-demo/signal4`

The files are `esh-sys-utils.c esh-sys-utils.h Makefile sigbad.c sigsafe.c`

The `Makefile` by default will create an executable named `sigbad`. This program creates many child processes and waits for their termination. Output is generated by `printf` by a child process when it is started and by the parent process each time the termination of a child process is detected. The `Makefile`, using "`make safe`" will create a variation of the program.

Purpose

The purposes of this demonstration are

- to see how a parent process can detect the termination of a child process
- to see the effect of non-reentrant code being used in the signal handler
- to see an instance of a "race condition"

Part 1: Steps

1. Use the `Makefile` to create the executable program `sigbad`.
2. At the shell prompt execute the `sigbad` program.
3. Observe the output that is produced.
4. Allow the program to continue to run. Eventually you will need to end the process by using a control-c.
5. Use the `Makefile` to create the executable program `sigsafe`. This is done by `"make safe".`
6. At the shell prompt execute the `sigsafe` program and observe its output.

Questions

Based on your observations, answer these questions.

1. Does the process executing `sigbad` complete normally?
2. What is the reason that the `sigbad` process does not complete?
3. Does the process executing `sigsafe` complete normally?
4. Compare `sigbad.c` and `sigsafe.c`. What has been added to `sigsafe.c` that allows it to run to completion?