CS570 Summer 2017 Assignment 3

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Design and implement an interruptible, clock and timer.

You shall create a program that does the following:

- Upon startup, read the total runtime (in seconds) the user wants the program to run for. A default value of 30 seconds will be used if the user does not include the time when launching the program, i.e., [username@edoras ~/a3]$ aclock 23 causes the program to run for 23 seconds, [username@edoras ~/a3]$ aclock (no arguments), the program would run for 30 seconds, and [username@edoras ~/a3]$ aclock 128 the program would run for 2 minutes and 8 seconds.
- The program (the main process and thread) shall create two child processes/threads (your choice), then busy-waits until all child processes/threads are complete and then perform a clean exit.
- The first child process shall implement a clock which prints the hour, minute, and second once every second (in human readable form using localtime). If the hour, minute, and second matches the user-provided alarm time, the Alarm would be printed as well.
- The second child process/thread, upon reaching the specified number of seconds (countdown timer perhaps?), will notify (using signal(), or pipe()) the other child process/threads (i.e. it's sibling process/threads) telling them to terminate and then terminate itself.
- Once all child processes/threads have terminated, the parent shall print a friendly message, then perform a clean exit.

Your project shall include a README file using the same conventions/requirements specified in the course README instructions file.

Your program will be tested by compiling and executing on edoras. Your program shall be written such that it compiles and executes cleanly when using cc/gcc/CC/g++. Note - you must use a Makefile. You shall create a sub-directory named "a3" in your home directory. In it, you shall place all of your project files, including your Makefile. Your source files shall contain sufficient comments for making the source easy to read. Points will be taken off for poorly (or non) commented source. Name the executable "aclock". Also, create an archive file (tarball, zip) and upload to Blackboard (one student per project).

- Create ~/a3 by hand.
- Create all necessary project files. Put them into ~/a3.
- The Makefile shall create an executable named "aclock" in this same directory (~/a3).
- The system call "system()" will NOT be allowed
- You may work individually but are highly encouraged to work in teams of two (no larger) on this assignment
- You may use gcc, or g++ compiler on this assignment

The assignment is due by Midnight on Monday, 26 JUN 2017

TURNING IN YOUR WORK:
Follow the turn-in procedures on class Blackboard.