

Assignment 5

CS2600, Fall 2022

In this programming assignment, you will demonstrate your ability to understand and handle Unix signals and timers, by writing a simple program to perform automatic logout commands. (This assignment is based largely on assignment 7.13 in Molay.)

Program Requirements

You will write a program, called `timeout.c`, which, by default, accepts a file name as input. Your program will sleep for a specific number of seconds (to be described later). At that point, the program will check the specified file's last modification time. If the file has been unchanged 'long enough' (to be described later), the program will send `SIGKILL` to itself (Hint: `getpid()` returns the process number of the current process.), and then exits. If not, the program will loop, repeating the "sleep and check" procedure indefinitely.

(This program could be used to implement an "autologout". Recall that the `"tty"` command returns the file name of the terminal connected to standard input. The last modification time of this "file" indicates the last time the terminal received or produced data; thus, the difference between the last modification time and the current time indicates the amount time the terminal has been idle. If that amount of time is "large enough", terminating the shell process associated with that terminal essentially causes a logout.)

Program Arguments and Default Value

Your program should accept the following command line option, which may appear in any order, along with the name of the file to be monitored.

- `"-t N"`, where N is a positive integer. This is the number of seconds that the program should sleep between checks. It is also the number of seconds that triggers the timeout; that is, if the file modification time is at least N seconds ago, the program should send `SIGKILL`. If this option is not specified, the program should use the default value of 10 seconds.

Submitting Your Program

Before 11:59:59 p.m., Thursday, November 17, 2022, you must upload a zip archive to the course Blackboard assignment for Assignment 5. This zip archive must contain all source code files for your *C-code program* and a *README* file of the Information on how to compile and run your program.