TCSS 422 — Computer Operating Systems
Winter 2015 — Homework Assignment 7

Due Date: Sunday, Mar. 15

Guidelines

Homework should be electronically submitted to the instructor by the end of the day on the due date. A submission link is provided on the course Canvas page for this assignment.

Assignment Description

In this assignment you'll complete a small program that gathers memory usage statistics about the processes in MINIX.

Implementation Specifications

Your program should query the total amount of memory being used by every process running in MINIX and display the following four summary statistics (appropriately labeled):

1) Total memory used by all processes.
2) The average memory used per process, i.e., total memory divided by the number of processes.
3) The most memory used by any process, i.e., the largest process.
4) The least memory used by any process, i.e., the smallest process.

The units for all four statistics should be bytes.

To query the memory being used by a process, you'll need to use information stored in the `/proc` directory structure. Each subdirectory in `/proc` represents a process, and within each subdirectory is a file called `psinfo` that records a variety of information about that process. The format for the `psinfo` file can be found in the source code that generates that file: `/usr/src/servers/procfs/pid.c`. Lines 96–108 and 144–158 produce the `psinfo` contents.

As your program traverses the `/proc` directory structure it's possible that process information may change. You *don't* need to worry about such changes. Instead, you may make the simplifying assumption that the directory structure and files won't change while your program is running.

Deliverables

The following items should be submitted to the instructor. Failure to correctly submit assignment files will result in a 10% grade penalty.

1) The completed source file(s).

Do not include any extraneous files, such as Eclipse IDE files, object files, or subversion files.