

CS3204 Operating Systems - Fall 2000

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Homework 1

Assigned: Tuesday, Aug. 29, 2000

Due: Tuesday, Sep. 5, 2000

1. [4 pts.] Exercise 2 in Nutt, Chapter 1. Your answer must be written concisely and in complete sentences.

2. [6 pts.] Our discussions in class have primarily focussed on operating systems for PCs and workstations. An increasingly important class of computers is handheld computers. *Palm, Inc.* (<http://www.palm.com>) is a leading distributor of handheld computers, and *PalmOS* (<http://www.palmos.com>) is the corresponding operating system. Answer the following questions by reviewing the PalmOS developer documentation available on the web site. (*Hint: I referenced the "PalmOS Programmer's Companion" and the "PalmOS SDK Reference" when developing these questions.*)

1. What function provided by PalmOS is similar to the Unix `fork()/exec*()` calls?
2. Although a file resource abstraction similar to that provided by Unix/MS Windows is available on PalmOS, what other resource abstraction is used by PalmOS for information storage?
3. Find and read the description of the `EvtGetEvent()` function. Are events in PalmOS resources (as defined in this class) or not? Why or why not?

3. [5 pts.] Exercise 8 in Nutt, Chapter 1. Your answer must be written concisely and in complete sentences.

4. [10 pts.] On a FreeBSD or Linux (you specify which) computer of your choice, locate and print a copy of the portion or portions of file `proc.h` (FreeBSD) or `sched.h` (Linux) that define the process control block (PCB). Write the structure and variable name(s) from the header file corresponding to each PCB field listed below. Submit the printed portion of `proc.h` with your solution.

- | | |
|---|--------------------------------------|
| a. process identifier (PID) | b. parent's PID |
| c. current state (e.g. running) | d. priority |
| e. time execution started | f. amount of CPU time consumed |
| g. copy of register contents on last suspension | h. main memory used by the process |
| i. accounting information | j. pointers to insert PCB into queue |
| k. file descriptor table | |

5. [5 pts.] Again, using FreeBSD or Linux (you specify which), do the following and submit the results of steps 2, 4 and 5:

1. logon to the system
2. Type "`ps -l`" Copy (or print) output.
3. Type "`man ps`" to read an explanation of what is in each field of the output in step 2.

4. Write a brief description of each process reported in step 2.
5. What fields of "ps -l" output are stored in the PCB?