

Full Name: _____

CS 450 Fall 2009

Final Exam

December 9, 2009

Instructions:

- This exam is closed-book, closed-notes.
- Write your full name on the front, and make sure that your exam is not missing any sheets.
- Good luck!

Problem 1	(/16) :
Problem 2	(/12) :
Problem 3	(/12) :
Problem 4	(/8) :
Problem 5	(/12) :
TOTAL	(/60) :

Problem 1. (16 points):

Multiple choice. For each of the following multiple choice problems, choose the *single best* answer by circling its corresponding letter.

1. Which of the following bits of code carries out a context switch to the kernel's scheduling/swapping process, a.k.a. `proc[0]`?
 - (a) `p = &proc[0];`
 - (b) `retu(proc[0].p_addr);`
 - (c) `u.u_procp = rpp;`
 - (d) `proc[0].p_flag = | SLOAD|SSYS;`
2. Which of the following data structures associated with active processes can be swapped out when the process is not running?
 - (a) the `proc` struct
 - (b) the `callout` array
 - (c) the interrupt vector
 - (d) the kernel stack
3. It is frequently the case that v6 code needs to be run *atomically*, i.e., without the possibility of being interrupted by code that will modify crucial data structures concurrently. Which of the following can be used to *begin* an atomic chunk of code?
 - (a) `sp10()`
 - (b) `rp->p_stat = SWAIT`
 - (c) `mov $1, SSR0`
 - (d) `bis $340, PS`
4. The current user struct can be accessed in the kernel via the pointer `_u`. Which of the following correctly initializes `_u`?
 - (a) `_u = 140000`
 - (b) `_u = *ka6`
 - (c) `mov $USIZE-1\<8|6, _u`
 - (d) `UISA->r[7] = ka6[1]`

Problem 4. (8 points):

Of the value returned by `swtch`, Lions has this to say:

... none of the procedures which call “`swtch`” directly examines the value returned here.

Only the procedures which call “`newproc`” are interested in this value, because of the way the child process is first activated!

What is Lions referring to? Justify the above quote.

