CS2630 – Operating Systems Theory
Assignment 2/3

Background

(This assignment is based on various parts of the course and assumes access to the Aspasia host, or a similar Linux based computer system; and familiarity with a high level programming language.)

This assignment investigates aspects of the operating system that are visible to the end user, either through the use of system calls in a high level language or through information that the operating system makes available. Try to find answers to the following questions. You will need to consult the manual pages to understand the commands and interpret their outputs.

Objective

1. What is the essential difference between a thread and a process? For a high level language familiar to you (e.g. C++ / Java etc.) what are the system or library calls to create a new process and a new thread?

2. Use the **mount** command on Aspasia to find out which file systems are mounted on the system and where. What different types of file system are mounted on Aspasia?

3. What information can you determine about the hardware on which Aspasia runs? [hint: look at some of the files in /proc] In particular, how many and what type of processors are available, how much memory is installed and how much swap space is available?

4. Find out the process number of the command shell you are using [hint: use the **ps** command, your command shell is probably called **bash**]. Go to the directory /proc/{your_process_number}. What information can you determine about this process by reading the files in this directory? Can you find out information about other users processes? Is this a security or privacy hazard?

5. Does Aspasia provide any semaphore operations? [hint: investigate the **man –k** option to search for keywords] . What operations can a high level language program carry out on a semaphore?

Deadline

This assignment should be handed into the departmental office (McCrea 126) not later than 14:00 on Friday 28th March 2003.

<div align="right">Karl Wilcox, March 2003</div>