CS 4061 Spring 2000, Exam 3

Name:____________________ ID#______________________

Question 1. Directories and IPC. (20 pts.)

When a person goes to load a file into a user application, it is often nice to have the application display a list of all the files in the present working directory. There are two ways to get this information from the system -- by using system calls and by using a shell command.

A. Give appropriate system calls for doing this and explain how you would use them.

B. Give an appropriate shell command for doing this and explain how you would use it. In particular, be sure to say what form of IPC you would use to get the information from the command and why.

Question 2. Client-Server Model. (30 pts.)

When we have a server process with one or more clients implemented using FIFOs, we can have the server read from a common FIFO that all the clients can write to, but we generally have a separate FIFO for each client to read from, rather than a single common FIFO that they can all read from.

A. List and explain two reasons for having multiple client FIFOs.

B. Would it be possible to have a single client FIFO for multiple clients? If not, explain why not. If so, explain how you could overcome the reasons you gave above.

C. Is there another IPC method that would make it easier to overcome the disadvantages of a single client message area that you listed in part A? If so, name the IPC type and explain how it could make this job easier. If not, explain why all IPC types are the same in this respect.

Question 3. IPC. (30 pts.)

A. Which IPC method would be best for implementing a web server? Explain your answer.

B. Is there another IPC method that could also be used? If so, say which one and explain how it could be used. If not, explain why not.

C. For requesting and sending ordinary web pages, would you use TCP or UDP? Explain your answer.

Question 4. Threads. (20 pts.)

A. If you were asked to implement JAVA threads on an OS that doesn't support threads, what implementation model would you use? Explain your answer.

B. If you were asked to implement JAVA threads on an OS that has kernel threads, what implementation model would you use? Explain your answer.