Operating systems

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Project 1

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1 Process creation

Process creation is mainly tackled when the user type a non built-in command. Sequential and parallel execution are mostly the same, except the fact that we have an additional loop in parallel and an array containing all the pids of our sub-processes.

In sequential mode, we created a function in which we just used 'fork' to create one sub-process. This sub-process will be killed after the execution of the command automatically because of the usage of 'execvp'. Then we call this function in a loop so that the execution of the commands are done sequentially.

In parallel mode, we created another function in which we call 'fork' in a loop. The created sub-processes execute the command roughly at the same time.

2 File handling

We decided to write in the binary file 'memdump.bin' the data in the following order :

- Size of the command name
- The command name
- The pid of the command
- The exit status of the command

This order is maintained for each command that have been executed in the shell (except built-in commands). When we want to read the data on this file, we follow this order to retrieve data in a consistent way.

3 Time passed on the project and difficulties

We have spent roughly 3 days working together on this part of the project.

The difficulties we've encountered were mainly about memory management (malloc and free). We drove valgrind mad !