UFAZ - Bachelor of Computer Science

System Programming

PW08 : processes

For each exercice, we expect the student to write a program, compile it and run it without errors of several examples. Test sets and comments are as important as the code itself.

Exercice 1

Write a program which takes as argument the name of a directory and then:

1. displays the system time, using seconds and micro-seconds (system call: `gettimeofday`) ;
2. runs (using one of the `exec` primitives) the `ls` command with the option `-l` on the directory provided as parameter;
3. display the time (as before) and the time the command `ls` took to run.

Exercice 2

Write a program, with one argument, a directory name which:

1. launches the command `ls` with the option `-R` on the directory;
2. redirects the standard output of `ls` to `/dev/null` ;
3. displays the sum of each processor time used by the `ls` command in seconds (primitive `times`).

Exercice 3

Write a C program equivalent to the following shell script, with one single argument, a user name:

```
ps eaux > foo ; grep "^$1 " < foo > /dev/null && echo "$1 is connected"
```

Your program should:

- actually run the commands `ps` and `grep` using the primitive `execlp`;
- set up the required redirections of I/O using the primitive `dup` (or `dup2`);
- display the final result using the primitive `write`.