



UFAZ - Bachelor of Computer Science

System Programming

PW-eval : exam

Read all the questions and explanations before starting writing answers to questions !

Return your work using a `.tar.gz` file which includes a directory contains all 4 files `Q1.c`, `Q2.c`, `Q3.c` and `Q4.c`. Write your name inside the `.c` files.

Exercice

For each question, you need to write a C program equivalent to the following shell command :

Q1.c `ps eaux | grep "^$1 "`

where `$1` is the first argument of your program

Q2.c `ps eaux | grep "^$1 " > /dev/null`

where `$1` is the first argument of your program

Q3.c `ps eaux > toto ; grep "^$1 "< toto > /dev/null`

The character `;` represents a sequence. You run `ps eaux > toto` first. When it is finished, you run `grep "^$1 " < toto > /dev/null`. You should use `wait` in order to make sure the 2 commands are runned in the appropriate order (one after the other, and never in parallel). The file `toto` could be created using `mkfifo`.

Q4.c `ps eaux | grep "^$1 "> /dev/null && echo "$1 is connected"`

Note that a command of the form `p && q` is runned as follows. We run `p` first and then:

- if the execution of `p` is successfull (exits correctly, with error code 0), we execute `q`
- if the execution of `p` is not successfull, we stop and do not execute `q`.

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` (only in Q4).