



## UFAZ - Bachelor of Computer Science

### System Programming

#### PW06 : environment variables /drivers

For each exercise, 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.

### Exercise 1

The shell variable `PATH` contains a list of directories separated by the character `:`. For instance:

```
/bin:/usr/bin:/usr/local/bin
```

Write a function which takes as argument a string and splits it into an array of strings, each with a single directory name.

Write a program which reads the `PATH` variable (using the function `getenv`) and splits its elements using the above-defined function and displays each of its elements.

Use this function to write a program called `which` to locate a command. For instance, `which ls` should return: `/bin/ls`.

### Exercise 2

Some shells (`ksh`, `zsh`, `bash`, etc.) have a variable named `CDPATH`. It specifies some search directories. When one uses a command `cd` with an argument (relative path), it is searched among the directories indexed by `CDPATH` and the change of directory is performed if it is found.

Write a command `chdir`. Why can't this command work ?

## Exercise 3

Fields `st_dev` and `st_ino` of the `stat` structure identify a file in the system in a unique way. Write a function `my_ttyname` similar to the library function `ttyname` which takes as argument a file descriptor and return a pointer to a (static) string contains the whole name of the file (searched for in `/dev` - under Linux, we shall search in `/dev/pts3` - ), or `NULL` if the file is not found.