

# The need for abstraction for user programs

How to write a user program like the *Bash* shell that reads keyboard inputs from the user?

➡ Read input data from the I/O device directly? But which one?

- The one connected to the PS2 port?
- The one connected to the USB?
- The one connected to the bluetooth?
- The remote one connected to the network?

⦿ User programs do not operate I/O devices directly

✓ The OS abstracts those functionalities and provide them as **system calls**

# System Calls

➔ Provide user programs with an API to use the services of operating system

There are 5 categories of system calls

- Process control
- File management
- Device management
- Information/maintenance (system configuration)
- Communication (IPC)
- Protection

✓ There are 393 system calls on Linux 3.7

[http://www.cheat-sheets.org/saved-copy/Linux\\_Syscall\\_quickref.pdf](http://www.cheat-sheets.org/saved-copy/Linux_Syscall_quickref.pdf)

