# Functional requirements

## Application

The purpose of the project is to develop a configurable system that will control a lightning system built up from four LEDs. The user must be able to setup each LED individually (ON/OFF feature) and could control the illumination level.

User can observe via UART interface all the actions that are performed.

The system will consist from the following peripherals:

* 4 LEDs controllable via PWM
* 1 joystick with 2 analog outputs and 1 push button
* 1 uart to USB converter
* 1 display (16 x 2 characters) controlled via GPIO

The LED will be controlled with an 200Hz PWM signal.

The menu will have the following structure:

1. LED 1 🡪 ON/OFF submenu
2. LED 2 🡪 ON/OFF submenu
3. LED 3 🡪 ON/OFF submenu
4. LED 4 🡪 ON/OFF submenu
5. Level 🡪 1,2,3,4,5

The joystick will allow the user to navigate in the menu:

* Up/Down movement will cycle the main menus / submenus
* Right movement 🡪 enter submenu
* Left movement 🡪 return to previous menu
* Push button 🡪 Select/ validate option inside menu

Port pinning will be defined during the first meeting for all peripherals.