

Practice of March 3, 2016

Programing on LaunchPad with Energia

The goal of this practice is to progress in programing in C/Arduino on th LaunchPad with Energia.

Optional : for question 4, send your program in a mail to pyr@pyr.ch

1) The use of **symbols** and well named **definitions** produce more readable programs.

Write again the « blink when push » program usine these definitions :

```
#define LedRougeOn digitalWrite (P1_0, HIGH)
#define LedRougeOff digitalWrite (P1_0, LOW)
#define LedVerteOn digitalWrite (P1_6, HIGH)
#define LedVerteOff digitalWrite (P1_6, LOW)
#define PoussoirOn (!digitalRead (P1_3))
```

2) **Sequencer** : simulation of a spinning wheel

Imagine 12 LED placed on a circle. Think about a program that gives the impression of a spinning wheel. Write the program that controls the first 2 LEDs (red LED and LED LaunchPad of the green).

3) **Counter and removing contact rebounds**

Your program should count on the push pressures, eliminating contact bounce.

The display will simply be binary on ... two bits, with red and green LEDs.

Start by counting the push of rising edges (which are falling edges of the signal on P1_3). Observe rebounds contact. Add time to remove them.

4) **Time mesure**. Filling a bottle.

A bottle filling system only has one input and one output :

- one push-button, controlled by the operator
- a valve that spilled the liquid in the bottle.

After turning on the machine (or you press the Reset button Launchpad), the operator will place a bottle, press the push-button, leaving it pressed until the bottle is full. The filling time is measured.

For the following bottles, it is sufficient for the operator to press the push-button shortly. The system will then fill the bottle, engaging the valve during the same time.

Microcontrôleurs pour la commande de systèmes mécaniques, LSP-EPFL

Pierre-Yves Rochat, pyr@pyr.ch 2014/02/27, version du 2016/02/28