

# Interrupt Lab

## Example:

**Write Embedded C code using ATmega328p  $\mu$ C to control led by external interrupt INT0.**

### *Requirements:*

1. The LED is connected to pin 0 in PORTC.
2. Connect the LED using Positive Logic configuration.
3. Connect a push button with Pull Down configurations at INT0 pin (PD2).
4. When the INT0 is triggered just toggle the led.

### Steps:

1. In External INT0 ISR function: toggle led state.
2. In initiate interrupt function:
  - a. Disable interrupts by clearing I-bit.
  - b. Configure INT0/PD2 as input pin.
  - c. Enable external interrupt pin INT0.
  - d. Trigger INT0 with the raising edge.
  - e. Enable interrupts by setting I-bit.
3. In Main:
  - a. Enable external INT0 (Call Init function)
  - b. Configure pin PC0 in PORTC as output pin
  - c. Initialization Led is off at the beginning (Positive Logic).
  - d. Write an empty infinite loop to make a program executed forever.

## Challenge:

**Write Embedded C code using ATmega328P  $\mu$ C to control 3-LEDs by external interrupt INT0.**

### *Requirements:*

1. 3-LEDs are connected to PORTC.
2. Connect all LEDs using positive Logic configuration.
3. A roll action is perform using the LEDs each LED for half second. The first LED is lit and roll down to the last LED then back to the first LED. This operation is done continuous.
4. Enable the internal pull up resistance at INT1 pin (PD3).
5. When the INT1 is triggered all the LEDs flash five times in five seconds.