Interrupt Lab

Example:

Write Embedded C code using ATmega328p µC 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. Create the initiate interrupt function <void Init()> in which you should:
   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 function:
   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 µC to control 3-LEDs by external interrupt INT0.

Requirements:

1. 3-LEDs are connected to PORTC (PC0 – PC2).
2. Connect all LEDs using positive Logic configuration.
3. A roll action is performed 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 continuously.
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.