Summary

This app-note shows how to use the input capture hardware to generate an interrupt whenever a rising edge occurs on IC1, which is port A, pin 2. This software does not debounce the input capture, if an unbounced mechanical switch is used to trigger the interrupt, several interrupts may occur.

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8 WIDTH !
HEX

8022   REGISTER:   TMSK1        \ timer interrupt mask register #1
8023   REGISTER:   TFLG1        \ timer interrupt flag register #1
8021   REGISTER:   TCTL2        \ timer control reg. #2, holds edge specification bits
4      CONSTANT    IC1.MASK     \ mask to set and clear IC1F and IC1I
10     CONSTANT    EDG1A.MASK   \ mask to set edge
20     CONSTANT    EDG1B.MASK   \ mask to set edge

: IC1.ISR ( -- )
\ Interrupt Service Routine for IC1
    IC1.MASK TFLG1 C!                       \ Clear interrupt flag
    \ add your code here
;

: IC1.INTERRUPT.DISABLE ( -- )
    IC1.MASK  TMSK1  CLEAR.BITS             \ disable IC1 interrupts
;

: IC1.INTERRUPT.INIT ( -- )
    IC1.MASK PORTA.DIRECTION CLEAR.BITS \ setup port A direction (DDRA) pin 2
                                        \      as input
    IC1.MASK  TMSK1  CLEAR.BITS             \ disable IC1 interrupts while we are
                                        \   setting up
    \ Here we configure the TCTL2 to set the interrupt to trigger on a
    \   rising edge only
    EDG1A.MASK  TCTL2 SET.BITS              \ Set EDG1A to 1
    EDG1B.MASK TCTL2 CLEAR.BITS             \ Set EDG1B to 0
    CFA.FOR IC1.ISR IC1.ID ATTACH           \ install handlers
    IC1.MASK TFLG1 C!                       \ Clear interrupt flag
    IC1.MASK  TMSK1  SET.BITS               \ set IC1I mask bit
    ENABLE.INTERRUPTS                       \ Globally enable interrupts
;
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