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;*****
;*   Counter and sender by UART   *
;*       20 MHz Xtal             *
;*       ATTiny 2313             *
;*       by M. Labr ml.          *
;*       rev. 06.06.2012         *
;*****
;
;pinb 7 input start counting
;pinb 6 input stop counting
;pinb 5 overflow pin control
;
;pind 1 uart tx
;
;pina 1 xtal
;pina 0 xtal
;
;UART parameters
;8 bit data
;1 bit stop
;no parity
;Rx off
;Tx on
;async.
;9600 baudrate
;
;
.nolist
.include      "tn2313def.inc"
.list

;*****
;*   Variables                   *
;*****
.def    temp      = r16
.def    tmr1_start = r17
.def    tmr1_stop  = r18
.def    tmr1_h     = r19
.def    tmr1_l     = r20

;*****
;*   Interrupts vectors         *
;*****
.cseg
.org    0x0000
        rjmp init
.org    0x0005
        rjmp tmr1_ovf          ;isr tmr1 overflow
.org    0x0013

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;*****
;*      Init setting:      *
;*****
init:      ldi temp,low(ramend)      ;setting stackpointer
           out SPL,temp
           ldi tmr1_start, 0b00000001
           ldi tmr1_stop, 0b00000000
           ldi temp, 0b00111111      ;pinb 7,6 input
           out ddrb, temp            ;others pins output
           ldi temp, 0b11011111
           out portb, temp           ; pull up enable

;*****
;*      UART setting:      *
;*****
           ldi temp, 0b00000000
           out UBRRH, temp
           ldi temp, 0b10000001
           out UBRL, temp            ;baudrate 9600
           ldi temp, 0b00000000
           out UCSRA,temp            ;
           ldi temp, 0b00001000
           out UCSRB,temp            ;Tx on
           ldi temp, 0b00001110
           out UCSRC,temp            ;8 data bits, no parity, async.

;*****
;*      Main function      *
;*****
main:      sei                      ;global interrupt allowed
           ldi temp, 0b1000000
           out TIMSK, temp           ;tmr1 ovf interrupt allowed
           ldi temp, 0b00000000
           out TCNT1H, temp          ;clearing tmr1 high register
           out TCNT1L, temp          ;clearing tmr1 low register
           ldi temp, 0b11011111
           out portb, temp           ; pull up enable

;*****
;*      Measuring function  *
;*****
m_start:   sbic PINB, 7              ;checking start signal on pinb7
           rjmp m_start              ;no signal, continue checking
           out TCCR1B, tmr1_start    ;reciecd signal, start measuring
m_stop:    sbic PINB, 6              ;checking for stop signal on pinb6
           rjmp m_stop               ;no signal, continue checking
           out TCCR1B, tmr1_stop     ;recieved signal, stop measuring
           in tmr1_l, TCNT1L
           in tmr1_h, TCNT1H
           nop
           nop
           nop

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;*****
;*   Send data by UART           *
;*****
tx_start:    nop
             out UDR, tmr1_l
tx_2:        nop
             sbis UCSRA, 5
             rjmp tx_2           ;wait until byte send
             out UDR, tmr1_h
tx_3:        nop
             sbis UCSRA, 5
             rjmp tx_3           ;wait until byte send
             rjmp main

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;*****
;*   ISR - TMR1 Overflow         *
;*****
tmr1_ovf:    nop
             out TCCR1B, tmr1_stop
             ldi temp, 0b01010101
             out TCNT1L, temp
             out TCNT1H, temp
             sbi pinb, 5
             reti

```