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;* ADC writes to STK500 LEDs on PORTB
;*
;*****
.include "m32def.inc"

reset:                                ;Main program entry point on reset

    ldi R16,0b11111111 ;set PB0-7 as outputs (STK500 LEDs)
    out DDRB,R16

    ldi R17,0b00000000 ;disable pull up resistor on each input pin of PORTA
    out PORTA,R17

    ldi R18,0b00000000 ;set PORTA as INPUT
    out DDRA,R18

    ldi R19, 0b01100000 ;REFS1bit7 and REFS0bit6 set to 01 for AVCC internal voltage reference i.e. 5V. Set
                        ;ADLARbit5=1 for 10 bit Left Adjusted Output.

    out ADMUX, R19 ;Set MUX4bit5-MUX0bit0 to 00000 for ADC) single ended input selection

startConversion:

    ldi R20, 0b11000000 ;ADENbit7=1 to enable ADC, ADSCbit6=1 to start conversion, ADPS2bit2-ADPS0=000 for
                        ;prescaler set to 1
    out ADCSRA, R20 ;Set MUX4bit5-MUX0bit0 to 00000 for ADC) single ended input selection

waitadc:

    sbic ADCSRA, ADSC ;ADSC bit = 0 after the ADC conversion is complete
    rjmp waitadc ;loop until the ADCS bit = 0

    in R21, ADCL ;Must read FIRST ADCL and THEN ADCH otherwise new conversion does not start
    in R22, ADCH

    ldi R23, 0xff
    eor R23, R22 ;turn 0s into 1s and 1s into 0s since STK500 LEDs turn on when PBx is zero
    out PORTB, R23

    rjmp startConversion

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