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; Author : ADI - Apps www.analog.com/MicroConverter

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; Date : 28 May 1999

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; File : ADCtimer.asm

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; Hardware : ADuC812

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; Description : Performs ADC conversions at 10KSPS in Timer2 mode.

; Outputs ADC results on P0 & P2. Continuously

; flashes LED (independently of ADC routine) at

; approximately 5Hz.

; All rate calculations assume an 11.0592MHz Mclk.

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$MOD812 ; Use 8052&ADuC812 predefined symbols

LED EQU P3.4 ; P3.4 drives red LED on eval board

CHAN EQU 0 ; convert this ADC input channel..

; ..chan values can be 0 thru 8

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; BEGINNING OF CODE

CSEG

ORG 0000h

JMP MAIN ; jump to main program

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; INTERRUPT VECTOR SPACE

ORG 0033H ; (ADC ISR)

MOV P0,ADCDATAL ; ADC result low byte to Port0

MOV P2,ADCDATAH ; high nibble and channel ID to Port2

RETI

;====================================================================

; MAIN PROGRAM

ORG 004Bh

MAIN:

; PRECONFIGURE...

MOV ADCCON1,#062h ; power up ADC & enable Timer2 mode

MOV ADCCON2,#CHAN ; select channel to convert

MOV RCAP2L,#0D2h ; sample period = 2 \* T2 reload prd

MOV RCAP2H,#0FFh ; = 2\*(10000h-FFD2h)\*1.085us

MOV TL2,#0D2h ; = 2\*46\*1.085us

MOV TH2,#0FFh ; = 99.8us

; LAUNCH Timer2 DRIVEN CONVERSIONS...

SETB EA ; enable interrupts

SETB EADC ; enable ADC interrupt

SETB TR2 ; run Timer2

; CONTINUE WITH OTHER CODE...

AGAIN: CPL LED ; blink (complement) the LED

CALL DELAY ; delay 100ms

JMP AGAIN ; repeat

; the micro is free to continue with other tasks (flashing the LED in

; this case) while the ADC operation is being controlled by Timer2

; and the ADC interrupt service routine.

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; SUBROUTINE

DELAY: ; delay 100ms

MOV R7,#200 ; 200 \* 500us = 100ms

DLY1: MOV R6,#229 ; 229 \* 2.17us = 500us

DJNZ R6,$ ; sit here for 500us

DJNZ R7,DLY1 ; repeat 200 times (100ms total)

RET

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END