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Name:

Section:

Documentation:

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; MCU: MSP430G2553

; Lecture: 5

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; Note: CCS exercise - this file has errors

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.cdecls C,LIST,"msp430.h" ; BOILERPLATE Include device header file

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.def RESET ; Export program entry-point to

; make it known to linker.

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.text ; BOILERPLATE Assemble into program memory

.retain ; BOILERPLATE Override ELF conditional linking and retain current section

.retainrefs ; BOILERPLATE Retain any sections that have references to current section

.global main ; BOILERPLATE Project -> Properties and select the following in the pop-up

; Build -> Linker -> Advanced -> Symbol Management

; enter main into the Specify program entry point... text box

;-------------------------------------------------------------------------------

; main

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main:

RESET mov.w #\_\_STACK\_END,SP ; BOILERPLATE Initialize stackpointer

StopWDT mov.w #WDTPW|WDTHOLD,&WDTCTL ; BOILERPLATE Stop watchdog timer

call #initMSP

mov.w #0x20, &R5+ ; R5 is the duty cycle

pwmLoop:

mov.w #0x40, R4 ; initialize R4 with the period

bis.w #0x01, &P1OUT ; set P1 logic 1

pinHigh:

dec.w R4 ; decrement the counter

cmp.w R5, R4 ; until its less than

jge pinHigh ; the duty cycle

bis.w #0x01, &P1OUT ; set P1 logic 0

pinLo:

dec.w R4 ; decrement counter

cmp.w #0, R4 ; until its less than zero

jl pinLo ; portion of PWM cycle

bit.w #0x08, &P1IN ; check P1.3 - the button

jnz pwmLoop ; if button not pressed redo PWM

updatePWM:

bit.b #8, &P1IN ; bit 3 of P1IN being pressed?

jz updatePWM ; Yes, branch back and wait

add.w #0x04, R5 ; decrease the duty cycle

and.w #0x3F, R5 ; makre sure to clear any cout bits

jmp pwmLoop ; and do it again

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; initMSP

; pin dir function

; P1.0 out red LED

; P1.3 in button

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initMSP:

bis.b #8, &P1REN ; Pullup/Pulldown Resistor Enabled on P1.3

bis.b #8, &P1OUT ; Assert output to pull-ups pin P1.3

bis.b #1, &P1DIR ; Set P1.0 as output (red LED)

bic.b #1, &P1OUT ; Clear P1.1 - turn the LED off on start

ret

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; System Initialization

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.global \_\_STACK\_END ; BOILERPLATE

.sect .stack ; BOILERPLATE

.sect ".reset" ; BOILERPLATE MSP430 RESET Vector

.short main ; BOILERPLATE