;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* main.s \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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; Section \*\*\*Tuesday 3-4pm\*\*\*

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; Lab number: 3

; Brief description of the program

; If the switch is presses, the LED toggles at 8 Hz

; Hardware connections

; PE1 is switch input (1 means pressed, 0 means not pressed)

; PE0 is LED output (1 activates external LED on protoboard)

;Overall functionality of this system is the similar to Lab 2, with six changes:

;1- the pin to which we connect the switch is moved to PE1,

;2- you will have to remove the PUR initialization because pull up is no longer needed.

;3- the pin to which we connect the LED is moved to PE0,

;4- the switch is changed from negative to positive logic, and

;5- you should increase the delay so it flashes about 8 Hz.

;6- the LED should be on when the switch is not pressed

; Operation

; 1) Make PE0 an output and make PE1 an input.

; 2) The system starts with the LED on (make PE0 =1).

; 3) Wait about 62 ms

; 4) If the switch is pressed (PE1 is 1), then toggle the LED once, else turn the LED on.

; 5) Steps 3 and 4 are repeated over and over

GPIO\_PORTE\_DATA\_R EQU 0x400243FC

GPIO\_PORTE\_DIR\_R EQU 0x40024400

GPIO\_PORTE\_AFSEL\_R EQU 0x40024420

GPIO\_PORTE\_DEN\_R EQU 0x4002451C

GPIO\_PORTE\_AMSEL\_R EQU 0x40024528

GPIO\_PORTE\_PCTL\_R EQU 0x4002452C

SYSCTL\_RCGCGPIO\_R EQU 0x400FE608

TIMER EQU 1240000

IMPORT TExaS\_Init

AREA |.text|, CODE, READONLY, ALIGN=2

THUMB

EXPORT Start

Start

; TExaS\_Init sets bus clock at 80 MHz

BL TExaS\_Init ; voltmeter, scope on PD3

; you initialize PE1 PE0

LDR R1, =SYSCTL\_RCGCGPIO\_R ;turns on clock for PortE

LDR R0, [R1]

ORR R0, R0, #0x10

STR R0, [R1]

NOP

NOP

LDR R1, =GPIO\_PORTE\_DIR\_R ;friendly code for making PE0 as output and PE1 an input

ORR R0, R0, #0x01

STR R0, [R1]

LDR R1, =GPIO\_PORTE\_DEN\_R ;indicates we want PE0-1 to be used digitally

LDR R0, [R1]

ORR R0, R0, #0x03

STR R0, [R1]

LDR R1, =GPIO\_PORTE\_AFSEL\_R ;turns off Alternative functions for PE0-1

LDR R0, [R1]

AND R0, R0, #0xFC

STR R0, [R1]

LDR R1, =GPIO\_PORTE\_DATA\_R ;makes PE0 on, originally

LDR R0, [R1]

ORR R0, R0, #0x01

STR R0, [R1]

CPSIE I ; TExaS voltmeter, scope runs on interrupts

loop

; you input output delay

BL delay

LDR R1, =GPIO\_PORTE\_DATA\_R

LDR R0, [R1]

LSLS R2, R0, #30 ;puts PE1 in most sig bit

BMI toggle

LDR R1, =GPIO\_PORTE\_DATA\_R

LDR R0, [R1]

ORR R0, R0, #0x01

STR R0, [R1]

B loop

delay LDR R3, =TIMER

wait SUBS R3, R3, #0x01

BNE wait

BX LR

toggle EOR R0, R0, #0x01

STR R0, [R1]

B loop

ALIGN ; make sure the end of this section is aligned

END ; end of file