NAME DISPLAY

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; ;

; QUEUE ;

; Display Routines ;

; EE/CS 51 ;

; Archan Luhar ;

; TA: Joe Greef ;

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; DisplayTimerInit

;

; Description: This function initializes the display timer event handler

; and display\_string.

; Operation: It zeroes out all 8 chars in display\_string and

; sets the timer event handler to the function pointer of

; DisplayTimerEventHandler.

;

; Arguments: None.

;

; Return Value: None.

;

; Local Variables: None.

;

; Shared Variables: display\_string

; currentIndex

;

; Global Variables: None.

;

; Input: None.

;

; Output: Display

;

; Error Handling: None.

;

; Algorithms: None.

;

; Data Structures: None.

;

; Registers Used: None.

;

; Stack Depth: .

;

; Author: Archan Luhar

; Last Modified: 11/04/2013

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;

; Pseudo Code

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

; currentIndex = 0

; display\_string = 0 dup 8

; Set Timer 2 registers to interrupt every 1/1000 second.

; Interrupt Table [ timer 2 ] = DisplayTimerEventHandler

; DisplayTimerEventHandler

;

; Description: This function is handles timer interrupts and outputs

; to the display what is stored at display\_string shared

; memory.

;

; Operation:

;

; Arguments: display\_string shared variable

;

; Return Value: None.

;

; Local Variables: None.

;

; Shared Variables: display\_string

; currentIndex

;

; Global Variables: None.

;

; Input: None.

;

; Output: Display

;

; Error Handling: None.

;

; Algorithms: None.

;

; Data Structures: None.

;

; Registers Used: None.

;

; Stack Depth: .

;

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;

;

; Pseudo Code

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

; FIRST\_DISPLAY\_UNIT = 0

; NUM\_DISPLAY\_DIGITS = 8

;

; OUT (FIRST\_DISPLAY\_UNIT + currentIndex), display\_string[currentIndex]

; currentIndex = (currentIndex + 1) mod NUM\_DISPLAY\_DIGITS

; Display

;

; Description: This function is used to display a <null> terminated string

; to the LED display on the target board.

;

; Operation: This function goes through each character of the string

; located at ES:SI by checking if it is a letter or digit

; and then writing the corresponding led display bits from a

; array to a space in memory dedicated to storing the current

; display. A timer interrupt handler will take care of

; actually OUTputting to the several display pieces the

; letter and digit "codes".

;

; Arguments: SI - the offset from ES which is the location of the the

; string.

;

; Return Value: None.

;

; Local Variables: None.

;

; Shared Variables: SEGTAB14 - LED pattern codes table for ASCII characters

; display\_string - a portion of the memory dedicated to

; storing the exact representation of the

; currently displayed characters. The timer

; event handler will display what is in this

; location.

;

; Global Variables: None.

;

; Input: None.

; Output: A timer interrupt handler will output to the LED display

; the ASCII-display binary translated digits and letters.

;

; Error Handling: None.

;

; Algorithms: None.

;

; Data Structures: Array.

;

; Registers Used: None.

;

; Stack Depth: .

;

; Author: Archan Luhar

; Last Modified: 11/04/2013

;

;

; Pseudo Code

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

; i = 0;

; while true:

; char = string[i]

; if char == ASCII\_NULL:

; display\_string[i] = DISPLAY\_STRING\_END\_CHAR

; break;

;

; display\_string[i] = SEGTAB14[char];

;

; i++;

; DisplayNum

;

; Description: This function is used to display a decimal number to

; the LED display.

;

; Operation: This function simply calls Dec2String to get the ASCII

; representation of the number and then call Display

; to display the ascii representation of the number.

;

; Arguments: AX - number to display.

;

; Return Value: None.

;

; Local Variables: None.

;

; Shared Variables: None.

; Global Variables: None.

;

; Input: None.

; Output: None.

;

; Error Handling: None.

;

; Algorithms: None.

;

; Data Structures: None.

;

; Registers Used: None.

;

; Stack Depth: .

;

; Author: Archan Luhar

; Last Modified: 11/04/2013

;

;

; Pseudo Code

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

; Display(Dec2String(n))

; DisplayHex

;

; Description: This function is used to display a hexadecimal number to

; the LED display.

;

; Operation: This function simply calls Hex2String to get the ASCII

; representation of the number and then call Display

; to display the ascii representation of the number.

;

; Arguments: AX - number to display.

;

; Return Value: None.

;

; Local Variables: None.

;

; Shared Variables: None.

; Global Variables: None.

;

; Input: None.

; Output: None.

;

; Error Handling: None.

;

; Algorithms: None.

;

; Data Structures: None.

;

; Registers Used: None.

;

; Stack Depth: .

;

; Author: Archan Luhar

; Last Modified: 11/04/2013

;

;

; Pseudo Code

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

; Display(Hex2String(n))