

## '-----Title-----

' File.....LCD2.pbp  
' Started....3/18/06  
' Microcontroller used: Microchip Technology PIC16F88  
' microchip.com  
' PicBasic Pro Code: micro-Engineering Labs, Inc.  
' melabs.com

## '-----Program Description-----

' Demonstrates several commands to move LCD cursor  
' on a 16 x 2 LCD display.

## '-----Related Lessons-----

' See LCD BASICS lesson at:  
' [http://cornerstonerobotics.org/curriculum/lessons\\_year2/erii14\\_lcd1.pdf](http://cornerstonerobotics.org/curriculum/lessons_year2/erii14_lcd1.pdf)  
'  
' lcd2.pbp is used in the lesson LCD Command Control Codes at:  
' [http://cornerstonerobotics.org/curriculum/lessons\\_year2/erii15\\_lcd2\\_lcd\\_command\\_control\\_codes.pdf](http://cornerstonerobotics.org/curriculum/lessons_year2/erii15_lcd2_lcd_command_control_codes.pdf)

## '-----Connections-----

16F88 Pin	Wiring
RA0	LCD pin 11(DB4)
RA1	LCD pin 12(DB5)
RA2	LCD pin 13(DB6)
RA3	LCD pin 14(DB7)
RA4	LCD Register Select(RS)
RB3	LCD Enable(E)

' See schematic for the usual connections

## '-----LCD Connections-----

LCD Pin	Wiring
1	Ground(Vss)
2	+ 5v(Vdd)
3	Center of 20K Pot(Contrast)
4	RA4(Register Select,RS)
5	Ground(Read/Write,R/W)
6	RB3(Enable)
7	No Connection(DB0)
8	No Connection(DB1)
9	No Connection(DB2)
10	No Connection(DB3)
11	RA0(DB4)
12	RA1(DB5)
13	RA2(DB6)
14	RA3(DB7)

## '-----Revision History-----

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' 11/28/07 Add 16F88 oscillator and ANSEL = 0
' initializations

'-----Constants/Defines-----

'-----Variables-----

    c0 VAR BYTE           ' Byte for counter
    c1 VAR BYTE           ' Byte for second counter

'-----Initialization-----

    ANSEL = 0             ' Configure all pins to digital
                          ' operation since not using ADC
                          ' (Analog to Digital Converter)

    OSCCON = $60          ' Sets the internal oscillator in the
                          ' 16F88 to 4 MHz

'-----Main Code-----

    PAUSE 1000            ' Pause to allow LCD to setup

loop:

    LCDOUT $FE,1,"Three"  ' Clears LCD screen, displays "Three"
    PAUSE 1000            ' Pause 1 second
    LCDOUT $fe,1          ' Clears LCD screen
    LCDOUT $FE,$C0,"days" ' Cursor moves to beginning of
                          ' second line, displays "days"
    PAUSE 1000            ' Pause 1 second
    LCDOUT $fe,$14,"only" ' Cursor moves to right one
                          ' position and displays "only"
    PAUSE 1000            ' Pause 1 second
    LCDOUT $fe,1          ' Clears LCD screen
    LCDOUT $fe,1,"Valid"  ' Clear LCD screen, display "Valid"
    PAUSE 1000            ' Pause 1 second
    FOR c0 = 1 TO 5       ' FOR..NEXT loop so "Valid" scrolls
                          ' off the screen to the left
    LCDOUT $fe,24         ' Scrolls display one character
                          ' position to the left
    PAUSE 100             ' Pause 100 milliseconds
```

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NEXT                ' Continue to next c0

LCDOUT $fe,1,"in store only" ' Clear LCD screen, display "in store only"

PAUSE 1000          ' Pause 1 second

FOR c0 = 1 TO 16    ' FOR..NEXT loop so "in store only"
                   ' scrolls off the screen to the right

LCDOUT $fe,28       ' Scrolls display one character
                   ' position to the right

PAUSE 100           ' Pause 100 milliseconds

NEXT                ' Continue to next c0

FOR c1 = 1 TO 2     ' FOR..NEXT loop to display
                   ' CD's $5.00 two times

LCDOUT $fe,1        ' Clear LCD screen

LCDOUT $fe, $80+17,"CD's $5.00"
                   ' Display "CD's $5.00" starting
                   ' 17 positions from the beginning
                   ' of the first line, i.e., just off
                   ' LCD screen

PAUSE 200           ' Pause 1 second

FOR c0 = 1 TO 28    ' FOR..NEXT loop so "CD's $5.00"
                   ' scrolls off the screen to the left

LCDOUT $fe,24       ' Scrolls display one character
                   ' position to the left

PAUSE 150           ' Pause 150 milliseconds

NEXT c0             ' Continue to next c0

NEXT c1             ' Continue to next c1

PAUSE 500           ' Pause 500 milliseconds

GOTO loop           ' Go to loop label

END
```