

'-----Title-----

' File.....LCD1.pbp  
' Started....3/18/06  
' Microcontroller used: Microchip Technology PIC16F88  
' microchip.com  
' PicBasic Pro Code: micro-Engineering Labs, Inc.  
' melabs.com

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

' Prints simple message to 16 x 2 parallel  
' LCD which uses Hitachi 44780 controller.  
' Most hobby LCD's use this controller.

'-----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)  
'  
' lcd1.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)

'-----Comments-----

' A practical guide to interfacing and  
' programming LCD modules can be found at  
' [www.epemag.wimborne.co.uk/resources.htm](http://www.epemag.wimborne.co.uk/resources.htm)  
' or by googling everyday practical electronics lcd  
' The article includes LCD pin functions.

'-----New PicBasic Pro Command-----

' The PicBasic Pro Compiler Manual is on line at:  
' <http://www.microengineeringlabs.com/resources/index.htm#Manuals>  
'  
' LCDOUT Item{,Item...}  
' Display Items on an intelligent Liquid Crystal Display. PBP  
' supports LCD modules with a Hitachi 44780 controller or  
' equivalent.  
' Look around page 95 in the PicBasic Pro Compiler Manual

'-----PIC 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 other usual PIC connections

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'-----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-----
' 11/28/07 Change MCU from 16F84A to 16F88
' 11/28/07 Add 16F88 oscillator and ANSEL = 0
'          initializations

'-----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

start:

LCDOUT $FE,1,"Hello World" ' Clears LCD screen, displays
                          ' Hello World

PAUSE 500        ' Pause 1/2 second

GOTO start       ' Go to start label

END
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