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'-----Title-----
' File.....16F877A_LCD1.pbp
' Started....3/18/06
' Microcontroller used:  Microchip Technology PIC16F877A
'                          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
'
' lcd1.pbp (the 16F88 program) is used in
' the lesson LCD Command Control Codes at:
' 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
' 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 Item 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-----
' See schematic at:
' http://www.cornerstonerobotics.org/schematics/pic16f877a\_lcd1\_lcd2.pdf

'      16F88 Pin          Wiring
'      -----          -
'      RA0                LCD pin 11(DB4)
'      RA1                LCD pin 12(DB5)
'      RA2                LCD pin 13(DB6)
'      RA3                LCD pin 14(DB7)
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'      RA4          LCD Register Select(RS)
'      RB3          LCD Enable(E)
'      See schematic for the other usual PIC 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-----

' 11/28/07 Change MCU from 16F84A to 16F88
' 11/28/07 Add 16F88 oscillator and ANSEL = 0
'          initializations
' 1/2/09   Change MCU from 16F88 to 16F877A
' 1/2/09   Delete ANSEL = 0 and add ADCON1 initialization

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

ADCON1 = %00000110          ' Changes PORTE and PORTA analog bits to
                            ' digital operation since not using ADC
                            ' (Analog to Digital Converter)

' For the ADCON1 Register table, look at the
' PIC16F877A datasheet. For Microchip PIC datasheets:
' http://www.microchip.
com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=2046
' Select 8-bit PIC Microcontrollers, then the device from the
' drop down menu. Now download the 16F87XA Datasheet.
' The ADCON1 Register is Register 11-2: ADCON1 Register,
' look around page 128 in the 16F877A datasheet.

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

PAUSE 1000                  ' Pause to allow LCD to setup

start:

LCDOUT $FE,1,"Hello World" ' $FE,1 clears the LCD display,
                            ' LCD then displays "Hello World"
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PAUSE 500           ' Pause 1/2 second  
GOTO start         ' Go to loop label  
END
```