```
'---------------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 Desciption--------

' 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/resourses.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)
```

```
'       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"
```

```
PAUSE 500                       ' Pause 1/2 second
GOTO start                       ' Go to loop label
END
```