```
'--------------Title--------------

' File......serin2_led_on_off.pbp
' Started....12/17/08
' Microcontroller used:  Microchip Technology PIC16F88
'                           microchip.com
' PicBasic Pro Code: micro-Engineering Labs, Inc.
'                     melabs.com

'--------Program Desciption--------

' PC controls PIC16F88 to turn on and off an LED.
' Program uses SERIN2 command to receive command from
' the PC and SEROUT2 command to send LED status back
' to the PC terminal program.

' ----Terminal Program Options-----

' HyperTerminal - 9600 baud 8N1, Flow control = None
'
' To download TeraTerm Pro 3.1.3, see:
' http://www.ayera.com/teraterm/download.cfm
' and download TeraTerm Pro Web 3.1.3.

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

' SERIN2
' SERIN2 DataPin{\FlowPin},Mode,{ParityLabel,}
' {Timeout,Label,}[Item...]
'
' The PicBasic Pro Compiler Manual is on line at:
' http://www.melabs.com/support/index.htm then under the
' Compiler Documentation: click on PICBASIC PRO Compiler
' Manual and then look at about page 134 in the manual.

'-----------Connections-----------

'   16F88 Pin    Function        Name Given      Wiring
'                                In Program
'   --------   -----------    ---------     ----------
'
'     RB0                       LED1        LED1
'     RB1                       LED2        LED2
'     RB2      Receiver Pin     PICSI       MAX232 Pin 9
'     RB5      Transmit Pin     PICSO       MAX232 Pin 10
'
' See the schematic for the PIC power and MCLR connections


' MAX232 Pin  Datasheet           Function and Wiring
'             Designation
' --------    --------   ---------------------------------
'
'  Pin 7      T2OUT      Receive Data to Male RS232 DB9 Pin 2
'  Pin 8      R2IN       Transmit Data from Male RS232 DB9 Pin 3
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' Pin 9      R2OUT       Receive Data to PIC RB2
' Pin 10     T2IN        Transmit Data from PIC RB5
'
' See schematic at: http://cornerstonerobotics.
org/schematics/pic_programming_serin2_led_on_off.pdf

'-----------Revisions-----------

' 9/21/10 Initiatize RB5 to HIGH

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

    DEFINE OSC      8        ' Defines oscillator setting at 8 MHz.
                            ' For SEROUT2, an oscillator speed faster
                            ' than 4MHZ may be required for reliable
                            ' operation at 9600 baud and above.

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

    MODE        VAR    WORD     ' WORD for MODE value
    Command     VAR    BYTE     ' BYTE for Command value
    LED1        VAR    PORTB.0  ' Defines PORTB.0 name as LED1
    LED2        VAR    PORTB.1  ' Defines PORTB.1 name as LED2
    PICSI       VAR    PORTB.2  ' Defines PORTB.2 name as PICSI
    PICSO       VAR    PORTB.5  ' Defines PORTB.5 name as PICSO

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

    ANSEL = 0                   ' Changes analog bits to digital.

    OSCCON = $70                ' Sets the internal oscillator in the
                                ' 16F88 OSCCON register to 8 MHz

    PORTB = %00100000           ' Sets PIC transmit pin RB5 to HIGH

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

    MODE = 84                   ' Sets RX/TX speed to 84 (9600 baud)
                                ' MODE = 188 (4800 baud)
                                ' MODE = 396 (2400 baud)
                                ' See appendix in PicBasic Pro manual
                                ' for other MODE examples.

' Instructions sent to terminal program

    SEROUT2 PICSO, MODE, ["Type in letter a, b, c, or d",10,13]
    SEROUT2 PICSO, MODE, ["   a turns on LED1",10,13]
    SEROUT2 PICSO, MODE, ["   b turns off LED1",10,13]
    SEROUT2 PICSO, MODE, ["   c turns on LED2",10,13]
    SEROUT2 PICSO, MODE, ["   d turns off LED2",10,13]

start:

    SERIN2 PICSI, MODE, [Command]
                                ' PIC receives Command input
```

```
                            ' ("a","b","c", or "d") typed in on
                            ' PC keyboard.
                            ' Format:  SERIN2 Pin, Mode, [Item1]
                            ' Pin = PICSI, Declared in variables
                            ' Mode = 84 (9600 baud rate)
                            ' [Item1} = [Command]

    SELECT CASE Command

    CASE "a"                ' If "a" is entered, LED to RB0 goes HIGH
        HIGH LED1           ' HIGH 0 turns on LED to RB0
        SEROUT2 PICSO, MODE, ["LED1 ON",10,13]
                            ' Sends back "LED1 ON" to computer

    CASE "b"                ' If "b" is entered, LED to RB0 goes LOW
        LOW LED1            ' LOW 0 turns off LED to RB0
        SEROUT2 PICSO, MODE, ["LED1 OFF",10,13]
                            ' Sends back "LED1 OFF" to computer

    CASE "c"                ' If "c" is entered, LED to RB1 goes HIGH
        HIGH LED2           ' HIGH 1 turns on LED to RB1
        SEROUT2 PICSO, MODE, ["LED2 ON",10,13]
                            ' Sends back "LED2 ON" to computer

    CASE "d"                ' If "d" is entered, LED to RB1 goes LOW
        LOW LED2            ' LOW 1 turns off LED to RB1
        SEROUT2 PICSO, MODE, ["LED2 OFF",10,13]
                            ' Sends back "LED2 OFF" to computer

        END SELECT

    GOTO start              ' Do it forever
    END
```