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'-----Title-----
' File.....serout2_potentiometer_8bit.pbp
' Started....12/16/08
' Microcontroller used:  Microchip Technology PIC16F88
'                          microchip.com
' PicBasic Pro Code:  micro-Engineering Labs, Inc.
'                          melabs.com

'-----Program Description-----
' Program uses SEROUT2 command to send 8-bit value
' of potentiometer reading to a PC terminal program.

'-----Related Lessons-----
' RS232 Serial Communications Hardware:
' http://www.cornerstonerobotics.org/curriculum/lessons_year2/erii_rs232_1.
pdf

' -----Terminal Program-----
' For the PIC to communicate with the PC,
' you will need to install a terminal program.
' Windows XP comes with HyperTerminal.
' HyperTerminal is found in your start menu via,
' Start Menu > Accessories > Communications > HyperTerminal.
' At the Connection Description screen, type in a name such
' as 9600_link and choose any icon.  Press the OK button.
' At the Connect To screen, set the "Connect using:"
' to the proper com port - for example COM1.  Press OK.
' At the COM1 Properties screen, make the following settings:
'
'   Bits per second      9600
'   Data bits            8
'   Parity               None
'   Stop bits           1
'   Flow control        None
'
' Press OK button

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

'   16F88 Pin   Function      Name Given      Wiring
'               -----
'               -----
'               -----
'   RA4         -             -               Potentiometer
'   RB2         Receiver Pin  -               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
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'          Designation
' -----
' Pin 7      T2OUT      Receive Data to Male RS232 DB9 Pin 2
' Pin 8      R2IN       Transmit Data from Male RS232 DB9 Pin 3
' Pin 9      R2OUT      Receive Data to PIC RB2
' Pin 10     T2IN       Transmit Data from PIC RB5
'
' See schematic at:
' http://www.cornerstonerobotics.org/schematics/pic\_programming\_serout2\_potentiometer.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-----
x      VAR  BYTE      ' BYTE for potentiometer input
PICSO  VAR  PORTB.5    ' Defines PORTB.5 name as PICSO
                       ' (PIC Serial Out)
'-----Initialization-----
ANSEL = %00010000     ' Leaves AN4 in analog mode, but
                       ' changes other analog bits to digital.
                       ' See table below.
'
' Analog Bit   Analog or Digital   PIC16F88 Pin
' -----
' AN0          Digital             RA0
' AN1          Digital             RA1
' AN2          Digital             RA2
' AN3          Digital             RA3
' AN4          Analog              RA4
' AN5          Digital             RB6
' AN6          Digital             RB7
'
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-----
start:

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ADCIN 4, x           ' Read analog voltage on AN4 (pin RA4)
                    ' and convert to 8-bit digital value
                    ' and store as x.

SEROUT2 PICS0, 84, ["POT = ", #x, 10, 13]
                    ' Format: SEROUT2 Pin, Mode, [Item1]
                    ' Pin = PICS0, Declared in Variables
                    ' Mode = 84 (9600 baud rate)
                    ' [Item1} = ["POT = ", #x, 10, 13]
                    ' Transmits POT = , the 8-bit
                    ' value of x, 10 (the ASCII codes for
                    ' line feed), and 13 (the ASCII code
                    ' for carriage return) to the PC.

PAUSE 1000          ' Pause 1 sec between readings

GOTO start         ' Go to loop label

END
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