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

' File......multiplex_tx3.pbp
' Started....9/1/12
' Microcontroller used:  Microchip Technology PIC16F88
'                        microchip.com
' PicBasic Pro Code: micro-Engineering Labs, Inc.
'                    melabs.com

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

' The program uses two of the analog-to-digital
' converters,(AN0 and AN1), to measure the voltage
' on the center pin of two potentiometers (analog signals).
' It then converts the analog voltages into 8-bit
' digital values (0 to 255) and transmits the digital
' values through a fiber-optic cable to a fiber-optic
' receiver.

'------------Schematic-------------

' See schematic at:
' http://cornerstonerobotics.org/schematics/control5_multiplex_tx_rx3.pdf

'----------Related Lesson----------

' http://cornerstonerobotics.
org/curriculum/lessons_year3/eriii23_control_navigation6.pdf

'-------PicBasic Pro Commands------

' The PicBasic Pro Compiler Manual is on line at:
' http://www.microengineeringlabs.com/resources/index.htm#Manuals

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

     x  VAR BYTE       ' Byte for potentiometer 1 input
     y  VAR BYTE       ' Byte for potentiometer 2 input

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

    DEFINE OSC       8              ' Oscillator is defined as 8 MHz.

    DEFINE HSER_RCSTA 90h           ' Set receive register to receive
enabled
    DEFINE HSER_TXSTA 20h           ' Set transmit register to transmitter
enabled
    DEFINE HSER_BAUD 9600           ' Set baud rate to 9600
    DEFINE HSER_BITS 8              ' Sets each data bit to an 8-bit value.

    PORTB = %00100000               ' All PORTB pins are low except RB5(TX)
    OSCCON = $70                    ' Internal oscillator is manually
                                    ' set to 8 MHz.
    TRISA = %00000011               ' Sets PORTA pins RA0 and RA1 as inputs,
                                    ' and all other PORTA pins as outputs.
```

```
    ANSEL = %00000011               ' Sets AN0 and AN1 in analog mode,
                                    ' but changes other analog pins to
                                    ' digital.  See table below.

'    Analog Bit    Analog or Digital      PIC16F88 Pin
'   ------------  ------------------     --------------
'       AN0            Analog                 RA0
'       AN1            Analog                 RA1
'       AN2            Digital                RA2
'       AN3            Digital                RA3
'       AN4            Digital                RA4
'       AN5            Digital                RB6
'       AN6            Digital                RB7

' For the ANSEL Register table, look at the
' PIC16F88 datasheet.  For Microchip PIC datasheets, see:
' 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 16F88 Datasheet.
' The ANSEL Register is Register 12-1: ANSEL Register,
' look around page 113 in the 16F88 datasheet.

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

start:

    ADCIN 0, x                  ' Read analog voltage on AN0 and
                                ' convert to 8-bit digital value
                                ' and store as x.

    ADCIN 1, y                  ' Read analog voltage on AN1 and
                                ' convert to 8-bit digital value
                                ' and store as y.

    HSEROUT ["B0", x, y]        ' Serial output, B0 is start bit, x and y
                                ' are variables containing potentiometer
                                ' values.

    GOTO start                  ' Go to start label

    END
```