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

' File......robot_photo1.pbp
' Started....11/28/07
' Microcontroller used:  Microchip Technology 16F88
'                        microchip.com
' PicBasic Pro Code: micro-Engineering Labs, Inc.
'                    melabs.com

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

' Displays readings from a photoresistor
' onto LCD display.  If the display reading is
' greater or equal to 150, the car will travel
' forward; if the display reading is less than
' 150, the car will turn.

'------------Comments--------------

' The resistance of the photoresistor that was used,
' (Jameco # 120299), varies from 300K in darkness
' to 8K ohms in bright light.  A 0.1 uF capacitor
' was in series with the photoresistor.

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

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

'       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)
'       RB1                 Photoresistor Input
'       RB1                 To base NPN controlling Motor 1
'       RB2                 To base NPN controlling Motor 2
'       See schematic for the usual 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)
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'         11                RA0(DB4)
'         12                RA1(DB5)
'         13                RA2(DB6)
'         14                RA3(DB7)

'--------Revision History--------

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

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

    p0  VAR BYTE              'Byte for photoresistor reading

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

    ANSEL = 0                 'Configure all pins to digital
                              'operation since not using ADC
                              '(Analog to Digital Converter)

    OSCCON = $60              'Sets the internal oscillator in the
                              '16F88 to 4 MHz

    PORTB = %00000000         'Sets up pins B0-B7 of PORTB at LOW

    TRISB = %00000001         'Sets up pin RB0 of PORTB as an input
                              'and the remaining PORTB pins as outputs

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

    PAUSE 1000                '1 second pause to allow LCD to setup

start:                        'Start label for loop

' Read photoresistor and display value:

    POT 0,255,p0              'POT command, photoresistor reading
                              'sent to RB0, scale set for 255, p0
                              'assigned reading of photoresistor.
                              'p0 value may vary from a
                              'minimum of 0 to a maximum of 255.
                              'In order to obtain the maximum reading
                              'of 255, you will probably have to
                              'experiment with the value of the
                              'capacitor in the robot_photo circuit.
                              'See details for POT command in the
                              'PICBASIC PRO Compiler book.

    LCDOUT $fe,1,"Photocell = ",#p0
                              'Clears LCD screen, displays
                              '"Photocell = " and value of p0

' Choose to travel straight or turn:

    IF p0 >= 150 THEN          'If photoresistor value, p0, is
                               'greater than or equal to 150, the
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    GOSUB straight          'program jumps to the
                            'subroutine straight.
                            'If p0 >= 150 is false, i.e. p0 < 150,
                            'the program advances to the ELSE
                            'program statement.

    ELSE

    GOSUB turn              'Program jumps to subroutine turn

    ENDIF

    GOTO start

    END

straight:                   'Subroutine straight

    HIGH 1 : HIGH 2         'Pins RB1 and RB2 are set at HIGH,
                            'turning on both NPN transistor switches,
                            'making the drive motors advance forward.

    PAUSE 20                'Pause 20 mS

    RETURN

turn:                       'Subroutine turn

    HIGH 1 : LOW 2          'Pin RB1 remains HIGH while pin RB2
                            'is set LOW,turning on only one NPN
                            'transistor switch, making the car turn.

    PAUSE 20                'Pause 20 mS

    RETURN
```