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'--------Title--------

' File......pwm_hpwm1.pbp
' Started....1/30/08
' Microcontroller used:  Microchip Technology 16F88
'                        microchip.com
' PBPro Code, micro-Engineering Labs, Inc.
'             melabs.com

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

' pwm_hpwm1.pbp drives two dc motors at different
' speeds and in directions using a TI754410 driver.

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

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

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

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

    pwm_motor2  VAR PORTB.0    'Labels PORTB.0 as pwm_motor1
    dx_motor2   VAR PORTB.1    'Labels PORTB.1 as dx_motor1
    pwm_motor1  VAR PORTB.2    'Labels PORTB.2 as pwm_motor2
    dx_motor1   VAR PORTB.3    'Labels PORTB.3 as dx_motor2
    red_led     VAR PORTB.4    'Labels PORTB.4 as red_led
    green_led   VAR PORTB.5    'Labels PORTB.5 as green_led
    p0          VAR BYTE       'Byte to store PWM Duty value
    p1          VAR BYTE       'Byte to store HPWM Duty value

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

    ANSEL = %00000000       '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

    TRISB = %00000000       'Sets all pins in PORTB as outputs

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

start:

'Forward Motion:

    HIGH dx_motor2      'Sets Motor2 forward direction
    HPWM 0,255,245      'Pulse sent to PORTB.0 at a duty
                        'value of 255(100% on time) at a frequency
                        'of 245 Hz.  This command will continue
                        'running while the PWM commmand that
                        'follows is executing.
    HIGH dx_motor1      'Sets Motor1 forward direction
```

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    PWM 2,255,200       'Pulse sent to PORTB.2 at a duty
                        'value of 255(100% on time) for 200 cycles.
                        'For 4 MHz oscillator, each cycle is
                        'about 5 ms long.  The total time traveling
                        'forward is about:
                        '    200 x 5ms = 1000 ms or 1 sec.

 'Reverse Motion at Slower Speed:

    LOW dx_motor2       'Sets Motor2 in reverse direction
    HPWM 0,80,245       'Set Dutycycle at 80
    LOW dx_motor1       'Sets Motor1 in reverse direction
    PWM 2,190,200       'Pulse sent to PORTb.0 at a duty
                        'value of 190(75% on time) for 200 cycles.
                        'Notice the Dutycycle values for Motro 1
                        'and Motor 2 are very different.  These
                        'values were established by calibration
                        'so the car will travel in a straight line.


'Deceleratаion Going Forward:

    FOR p0 = 255 TO 160 STEP -1
    p1 = p0-110
    HIGH 1
    HPWM 0,p1,245
    HIGH 3              'Sets direction
    PWM 2,p0,10         'Pulse sent to PORTb.0 at a duty
                        'value of 140(55% on time) for
                        '30 cycles.  Motor rotational speed
                        'approximately 20-24% of maximum rpm.
    NEXT p0

    GOTO start            'Jump to start label and start all over

    END
```