

```
'-----Title-----  
  
' File.....16F8977A_h_bridge_sn754410_1.pbp  
' Started....1/17/08  
' Microcontroller used:  Microchip Technology 16F877A  
'                          microchip.com  
' PicBasic Pro Code: micro-Engineering Labs, Inc.  
'                          melabs.com  
  
'-----Program Description-----  
  
' Drives two motors using TI SN754410 H-bridge  
' motor driver.  
  
'-----Schematic-----  
  
' See schematic at:  
' http://www.cornerstonerobotics.org/schematics/pic16f877a\_h\_bridge\_sn754410.pdf  
  
'-----Related Lesson-----  
  
' h_bridge_sn754410_1.pbp (the 16F88 program) is used in  
' the lesson MOTOR CONTROL H-Bridges at:  
' http://cornerstonerobotics.org/curriculum/lessons\_year2/erii20\_motor\_control\_h\_bridges.pdf  
  
'-----Comments-----  
  
' PWM (Pulse Width Modulation) has yet to be covered  
' so its port is either set HIGH (100% duty cycle)  
' or LOW (0% duty cycle). See the lesson on PWM  
' to adjust values between 100% and 0%. See:  
' http://cornerstonerobotics.org/curriculum/lessons\_year2/erii21\_motor\_control\_pwm.pdf  
  
'-----Variables-----  
  
    pwm_motor1  VAR PORTB.0      ' Names PORTB.0 as pwm_motor1  
    dx_motor1   VAR PORTB.1      ' Names PORTB.1 as dx_motor1  
    pwm_motor2  VAR PORTB.2      ' Names PORTB.2 as pwm_motor2  
    dx_motor2   VAR PORTB.3      ' Names PORTB.3 as dx_motor2  
    red_led     VAR PORTB.4      ' Names PORTB.4 as red_led  
    green_led   VAR PORTB.5      ' Names PORTB.5 as green_led  
  
'-----Initialization-----  
  
    PORTB = %00000000      ' Sets RB0-RB7 to LOW  
  
    TRISB = %11000000      ' Sets pins RB0-RB3 of PORTB as an output  
                          ' and pins RB4-RB7 of PORTB as inputs  
  
    ADCON1 = %00000110     ' Changes PORTE and PORTA analog bits to  
                          ' digital operation since not using ADC  
                          ' (Analog to Digital Converter)
```

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

```
start:          ' Label for start

' Red and green LEDs alternately flash
  red_led = 1          ' PORTB.4, called red_led,set HIGH,(1)
  green_led = 0       ' PORTB.5, called green_led,set LOW,(0)
  PAUSE 500           ' Wait 500 ms or 1/2 second
  red_led = 0        ' PORTB.4, called red_led,set LOW,(0)
  green_led = 1      ' PORTB.5, called green_led,set HIGH,(1)
  PAUSE 500           ' Wait 500 ms or 1/2 second
  green_led = 0     ' PORTB.5, called green_led,set LOW,(0)
' Motor 1 forward, Motor 2 forward:
  dx_motor1 = 1      ' Motor 1 direction set to forward,(1)
  pwm_motor1 = 1     ' Motor 1 PWM set to HIGH,(100% duty cycle)
  dx_motor2 = 1      ' Motor 2 direction set to forward,(1)
  pwm_motor2 = 1     ' Motor 2 PWM set to HIGH,(100% duty cycle)
  PAUSE 2000        ' Wait 2000 ms or 2 seconds
' Motor 1 reverse, Motor 2 reverse:
  dx_motor1 = 0     ' Motor 1 direction set to reverse,(0)
  pwm_motor1 = 1    ' Motor 1 PWM set to HIGH,(100% duty cycle)
  dx_motor2 = 0     ' Motor 2 direction set to reverse,(0)
  pwm_motor2 = 1    ' Motor 2 PWM set to HIGH,(100% duty cycle)
  PAUSE 2000        ' Wait 2000 ms or 2 seconds
' Motor 1 stopped, Motor 2 forward:
  dx_motor1 = 0
  pwm_motor1 = 0
  dx_motor2 = 1
  pwm_motor2 = 1
  PAUSE 2000
' Motor 1 stopped, Motor 2 reverse:
  dx_motor1 = 0
  pwm_motor1 = 0
  dx_motor2 = 0
  pwm_motor2 = 1
  PAUSE 2000
' Motor 1 forward, Motor 2 stopped:
  dx_motor1 = 1
  pwm_motor1 = 1
  dx_motor2 = 0
  pwm_motor2 = 0
  PAUSE 2000
' Motor 1 reverse, Motor 2 stopped:
  dx_motor1 = 0
  pwm_motor1 = 1
  dx_motor2 = 0
  pwm_motor2 = 0
  PAUSE 2000
' Motor 1 stopped, Motor 2 stopped:
  dx_motor1 = 0
  pwm_motor1 = 0
  dx_motor2 = 0
  pwm_motor2 = 0
  PAUSE 2000
```

```
'Red and green LEDs flash together  
red_led = 1  
green_led = 1  
PAUSE 500  
red_led = 0  
green_led = 0  
  
GOTO start           ' Jump to start label  
  
END
```