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'-----Title-----
' File.....h_bridge_sn754410_1.pbp
' Started....1/17/08
' Microcontroller used:  Microchip Technology 16F88
'                          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://cornerstonerobotics.
org/schematics/h_bridge_sn754410_with_pic_drive.pdf

'-----Related Lesson-----
' h_bridge_sn754410_1.pbp 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

ANSEL = 0              ' Configure all pins to digital
' operation since not using ADC
' (Analog to Digital Converter)
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OSCCON = $60          ' Sets the internal oscillator in the
                      ' 16F88 to 4 MHz

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

loop:                  ' Label for loop

' 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
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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 loop           ' Jump to loop label

END
```