#include <p18f4550.h>

void timer2Init(void) {

T2CON = 0b00000111; // Timer2 ON, Prescaler = 16

PR2 = 0x95; // Set PR2 for 200us PWM period

}

void delay(unsigned int time) {

unsigned int i, j;

for(i = 0; i < time; i++) {

for(j = 0; j < 2000; j++); // Simple software delay

}

}

void main(void) {

unsigned int i;

// Configure RC1 and CCP1 (RC2) as output pins

TRISCbits.TRISC1 = 0; // RC1 pin as output

TRISCbits.TRISC2 = 0; // CCP1 pin as output

LATCbits.LATC1 = 0; // Initialize RC1 to low

// Configure CCP1 for PWM mode with 10% duty cycle initially

CCP1CON = 0b00111100; // Set PWM mode; least significant duty bits as <1:1>

CCPR1L = 0x0F; // Set duty cycle to 10% (0x0F)

timer2Init(); // Initialize Timer2 for PWM

TMR2ON = 1; // Turn on Timer2 to start PWM

// Main loop to vary duty cycle from ~10% to ~100% and back

while (1) {

// Increase duty cycle from 10% to 100%

for (i = 15; i < 150; i++) {

CCPR1L = i; // Set duty cycle

delay(100); // Delay to observe change

}

// Decrease duty cycle from 100% to 10%

for (i = 150; i > 15; i--) {

CCPR1L = i; // Set duty cycle

delay(100); // Delay to observe change

}

}

}