**EXPERIMENT NO. 9**

/\* Calculations

\* Fosc = 48MHz

\*

\* PWM Period = [(PR2) + 1] \* 4 \* TMR2 Prescale Value / Fosc

\* PWM Period = 200us

\* TMR2 Prescale = 16

\* Hence, PR2 = 149 or 0x95

\*

\* Duty Cycle = 10% of 200us

\* Duty Cycle = 20us

\* Duty Cycle = (CCPR1L:CCP1CON<5:4>) \* TMR2 Prescale Value / Fosc

\* CCP1CON<5:4> = <1:1>

\* Hence, CCPR1L = 15 or 0x0F

\*/

#include<p18f4550.h>

unsigned char count=0;

bit TIMER,SPEED\_UP;

void timer2Init(void)

{

T2CON = 0b00000010; //Prescalar = 16; Timer2 OFF

PR2 = 0x95; //Period Register

}

/\*void Interrupt\_Init(void)

{

INT1IE = 1; //Enable external interrupt INT1

INTEDG1 = 0; //Interrupt on falling edge

GIE = 1; // Enable global interrupt

}\*/

/\*void interrupt ISR(void)

{

if (INT1IF) // If the external interrupt flag is 1, do .....

{

INT1IF = 0; // Reset the external interrupt flag

if(SPEED\_UP)

{

if(count < 8)

{

count++;

CCPR1L = (count \* 0x0F); //Increment duty cycle

}

else SPEED\_UP = 0;

}

else

{

if(count > 1)

{

count--;

CCPR1L = (count \* 0x0F); //Decrement duty cycle

}

else SPEED\_UP = 1;

}

}

}\*/

void delay(unsigned int time)

{

unsigned int i,j;

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

for(j=0;j<1000;j++);

}

void main(void)

{

unsigned int i;

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

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

LATCbits.LATC1 = 0;

CCP1CON = 0b00111100; //Select PWM mode; Duty cycle LSB CCP1CON<4:5> = <1:1>

CCPR1L = 0x0F; //Duty cycle 10%

timer2Init(); //Initialise Timer2

//Interrupt\_Init(); //Initialise interrupts

//SPEED\_UP = 1;

TMR2ON = 1; //Timer2 ON

while(1) //Loop forever

{

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

{

CCPR1L = i;

delay(100);

}

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

{

CCPR1L = i;

delay(100);

}

}

}