```
//Exp 1 Memory Transfer
#include<reg51.h>
void main(void)
{
unsigned char x, y, z, m, n, t;
x=0x04;
y=0x02;
z=x+y;
P0=z;
m=x-y;
P1=m;
n=x*y;
P2=n;
t=x/y;
P3=t;
}

//Exp2 Parallel port interfacing of LEDs
#include<reg51.h>
Delay();
void main(){
while(1){
P2=0XAA;
Delay();
P2=0X55;
Delay();
}}
Delay(){
unsigned char j;
for(j=0;j<20;j++){
TMOD=0X01;
TH0=0XDC;
TLO=0X00;
while(TF0==1);
TR0=0;
TF0=0;
}}

//Exp3 7-segment display
#include<reg51.h>
void main(){
unsigned char code1[]={0x3F,0x06,0x5b,0x4f,0x66,0x6d,0x7d,0x07,0x7f,0x67};
int k;
while(1){
for(k=0;k<=10;k++){
P2=code1[k];
delay();
}}}
delay(){
int i;
```

```
for(i=0;i<=12;i++){
TMOD=0x01;
TLO=0x00;
THO=0x06;
TRO=1;
while(TFO==0);
TRO=0;
TFO=0;
}}

//Exp4 interfacing of stepper motor to 8051 software delay using timer
#include<reg51.h>
void delay();
void main(){
unsigned char dat;
while(1){
dat=0X08;
P2=dat;
delay();
dat=0X04;
P2=dat;
delay();
dat=0X02;
P2=dat;
delay();
dat=0X01;
P2=dat;
delay();
}}
void delay(){
TMOD=0X10;
TH1=0X00;
TL1=0X00;
TR1=0;
while(TF1=0);
TR1=0;
TF1=0;
}

//Exp5 interfacing button,LED,relay & buzzer
#include<p18F4550.h>

void delay()
{
    unsigned int i;
    for (i=0; i<30000; i++);
}

void main()
{
```

```
    unsigned char i, key = 0;
    TRISB = 0x00;

    ADCON1 = 0x0F;
    TRISAbits.TRISA2 = 1;
    TRISAbits.TRISA3 = 1;

    TRISAbits.TRISA5 = 0;
    TRISAbits.TRISA4 = 0;

    while(1)
    {
        if (PORTAbits.RA2 == 0) key = 0;
        if (PORTAbits.RA3 == 0) key = 1;

        if (key == 0)
        {
            PORTAbits.RA4 = 1;
            PORTAbits.RA5 = 0;
            for (i=0; i<8; i++)
            {
                PORTB = 1 << i;
                delay();
                PORTB = 0x00;
                delay();
            }
        }

        if (key == 1)
        {
            PORTAbits.RA4 = 0;
            PORTAbits.RA5 = 1;
            for (i=7; i>0; i--)
            {
                PORTB = 1 << i;
                delay();
                PORTB = 0x00;
                delay();
            }
        }
    }
}

//Exp6 interfacing of LCD to PIC 18FXXXX
#include <p18f4550.h>

#define LCD_EN PORTAbits.RA1
#define LCD_RS PORTAbits.RA0
#define LCDPORT PORTB
```

```
void lcd_delay(unsigned int time) {
    unsigned int i, j;
    for (i = 0; i < time; i++) {
        for (j = 0; j < 100; j++);
    }
}

void SendInstruction(unsigned char command) {
    LCD_RS = 0;
    LCDPORT = command;
    LCD_EN = 1;
    lcd_delay(10);
    LCD_EN = 0;
    lcd_delay(10);
}

void SendData(unsigned char lcddata) {
    LCD_RS = 1;
    LCDPORT = lcddata;
    LCD_EN = 1;
    lcd_delay(10);
    LCD_EN = 0;
    lcd_delay(10);
}

void InitLCD(void) {
    ADCON1 = 0x0F;
    TRISB = 0x00;
    TRISAbits.RA0 = 0;
    TRISAbits.RA1 = 0;

    SendInstruction(0x38);
    SendInstruction(0x06);
    SendInstruction(0x0C);
    SendInstruction(0x01);
    SendInstruction(0x80);
}

unsigned char *String1 = "Trupti";
unsigned char *String2 = "Nagrale";

void main(void) {
    InitLCD();

    while (*String1) {
        SendData(*String1);
        String1++;
    }

    SendInstruction(0xC0);
```

```
    while (*String2) {
        SendData(*String2);
        String2++;
    }

    while (1);
}
```

```
//Exp7 Interfacing of LED to PIC 18FXXXX
#include<p18f550.h>
void delay(unsigned int time){
unsigned int i, j;
for(i=0; i<time; i++)
for(j=0; j<5000; j++)
}
void main(void){
TRISB=0x00;
while(1){
PORTB=0xCC;
delay(200);
PORTB=0x33;
delay(200);
}}
```

```
//Exp8 Square wave using timer
#include<reg51.h>
sbit wave=P2^1;
void timer0(void) interrupt 1
{
wave=~wave;
}
void main(){
while(1){
TMOD=0x01;
TH0=0xFF;
TL0=0xF9;
IE=0x82;
TR0=1;
}}
```

```
//Exp9 Interfacing of LCD to 8051 mc
#include <reg51.h>
#define lcd_data P1

sbit rs=P2^2;
sbit rw=P2^1;
sbit en=P2^0;

void lcd_int();
void cmd(unsigned char a);
```

```
void dat(unsigned char b);
void show(unsigned char *s);
void lcd_delay();

void lcd_init()
{
    cmd(0x38);
    cmd(0x0e);
    cmd(0x01);
    cmd(0x06);
    cmd(0x0c);
    cmd(0x80);
}

void cmd(unsigned char a)
{
    lcd_data=a;
    rs=0;
    rw=0;
    en=1;
    lcd_delay();
    en=0;
}

void dat(unsigned char b)
{
    lcd_data=b;
    rs=1;
    rw=0;
    en=1;
    lcd_delay();
    en=0;
}

void show(unsigned char *s)
{
    while(*s)
    {
        dat(*s++);
    }
}

void lcd_delay()
{
    unsigned int lcd_delay;
    for(lcd_delay=0;lcd_delay<6000;lcd_delay++);
}

int main()
{
```

```
    unsigned int j;
    lcd_init();
    while(1)
    {
        cmd(0x80);
        show("Trupti");
        cmd(0xc0);
        show("Nagrale");
        for(j=0; j<30000; j++);
        cmd(0x01);
        for(j=0; j<30000; j++);
    }}

//Exp10 ADC and display ADC value
#include <p18f4550.h>
#include<stdio.h>
#define LCD_EN LATAbits.LA1
#define LCD_RS LATAbits.LA0
#define LCDPORT LATB

void lcd_delay(unsigned int time)
{
 unsigned int i , j ;

    for(i = 0; i < time; i++)
    {
            for(j=0;j<50;j++);
    }
}


void SendInstruction(unsigned char command)
{
     LCD_RS = 0;
     LCDPORT = command;
     LCD_EN = 1;
     lcd_delay(10);
     LCD_EN = 0;
     lcd_delay(10);
}

void SendData(unsigned char lcddata)
{
     LCD_RS = 1;
     LCDPORT = lcddata;
     LCD_EN = 1;
     lcd_delay(10);
     LCD_EN = 0;
     lcd_delay(10);
}
```

```
void InitLCD(void)
{
    ADCON1 = 0x0F;
    TRISB = 0x00;
    TRISAbits.RA0 = 0;
    TRISAbits.RA1 = 0;

    SendInstruction(0x38);
    SendInstruction(0x06);
    SendInstruction(0x0C);
    SendInstruction(0x01);
    SendInstruction(0x80);
}

void ADCInit(void)
{
    TRISEbits.RE1 = 1;
    TRISEbits.RE2 = 1;

    ADCON1 = 0b00000111;
    ADCON2 = 0b10101110;
}

unsigned short Read_ADC(unsigned char Ch)
{
    ADCON0 = 0b00000001 | (Ch<<2);
    GODONE = 1;
    while(GO_DONE == 1 );
    return ADRES;
}

void DisplayResult(unsigned short ADCVal)
{
 unsigned char i,text[16];
 unsigned short tempv;
 tempv = ADCVal;

 SendInstruction(0x80);
 for(i=0;i<10;i++)
   if(tempv & 0x200)
   {
    SendData('1');
   }
   else
   {
     SendData('0');
   }
   tempv = tempv<<1;
 }
```

```
 ADCVal = (5500/1024)*ADCVal;
 sprintf(text,"ADC value=%4dmv",ADCVal);
 SendInstruction(0xC0);
 for(i=0;i<16;i++)
 {
   SendData(text[i]);
 }

}

void main()
{
    unsigned short Ch_result;

    TRISB = 0x00;
    ADCInit();
    InitLCD();

    while(1)
    {
        Ch_result = Read_ADC(7);
        DisplayResult(Ch_result);
        lcd_delay(1000);
    }
}

//Exp11 PWM signal for DC motor
#include<p18f4550.h>

unsigned char count=0;
bit TIMER,SPEED_UP;

void timer2Init(void)
{
    T2CON   =   0b00000010;
    PR2     =   0x95;
}

/*void Interrupt_Init(void)
{
    INT1IE  =   1;
    INTEDG1 =   0;
    GIE     =   1;
}*/

/*void interrupt ISR(void)
{
     if (INT1IF)
    {
```

```
        INT1IF  =   0;
        if(SPEED_UP)
        {
            if(count < 8)
            {
                count++;
                CCPR1L = (count * 0x0F);
            }

            else SPEED_UP = 0;

        }

        else
        {
            if(count > 1)
            {
                count--;
                CCPR1L = (count * 0x0F);
            }
            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;
    TRISCbits.TRISC2    = 0;
    LATCbits.LATC1      = 0;
    CCP1CON  =   0b00111100;
    CCPR1L   =   0x0F;
    timer2Init();
    //Interrupt_Init();

    //SPEED_UP = 1;
    TMR2ON = 1;

    while(1)
    {
        for(i=15;i<150;i++)
```

```
        {
            CCPR1L = i;
            delay(100);
        }
        for(i=150;i>15;i--)
        {
            CCPR1L = i;
            delay(100);
        }
    }
}
```