//PRactical 1 Internal to internal:

ORG 0000H

MOV R7,#05H

MOV R0,#30H

MOV R1,#50H

LOOP: MOV A,@R0

MOV @R1,A

INC R0

INC R1

DJNZ R7, LOOP

NOP

END

//• Internal to external

ORG 0000H

MOV R2,#0AH

MOV R0,#50H

MOV DPTR,#60h

LOOP: MOV A,@R0

MOVX @DPTR,A

INC R0

INC DPTR

DJNZ R2, LOOP

 NOP

END

case1:// Program for Toggle //All bits of Port

#include<reg51.h>

void Delay(void);

void main (void)

{ while(1) // infinite loop

{ P3 = 0x00; // LED ON

Delay();

P3 = 0xff; // LED OFF

Delay(); } }

void Delay(void) {

int i, j;

for(i=0;i<10;i++) {

for(j=0;j<10000;j++); } }

**//case2:**

**#include<reg51.h>**

**void T1M1Delay(void);**

**void main (void) {**

**unsigned char x;**

**P2=0x55;**

**while(1) // infinite loop**

**{ P2=~P2;**

**//toggle all bits of P2**

**P3 = 0x00;**

**for(x=0; x<20;x++)**

**T1M1Delay(); } }**

**void T1M1Delay(void) {**

**TMOD= 0X10;**

**// TIMER 1 MODE 1 (16 BIT)**

**TL1= 0XFE; //LOAD TL1**

**TH1=0XA5; //LOAD TH1**

**TR1=1; // START TIMER 1**

**while(TF1==0);**

**//WAIT TILL TF1 TO ROLL OVER**

**TR1=0; //STOP TIMER**

**TF1=0; // RESET FLAG }**

**//case3:hex counter**

#include <reg51.h>

void delay(){

unsigned int i, j;

for(i = 0; i < 255; i++){

for(j = 0; j < 255; j++){

// Empty loop for delay}

} }

void main() {

unsigned int z;

while(1) { // Infinite loop

for(z = 0x00; z<=0xff; z++)

{ P1 = z; // Output count to Port 1 //(LEDs)

delay();

// Delay for visible change

 } } }

**PR:3 7seg**

#include <reg51.h>

#define SEGMENT\_PORT P2 //Define the port connected to the //7-segment display

// Segment values for digits 0 to 9

unsigned char segment\_code[10] = {0x3F,0x06,0x5B,0x4F,0x66,0x6D,0x7D,0x07,0x7F,0x6F};

void delay(unsigned int ms){

unsigned int i, j;

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

for (j = 0; j < 1275; j++);

} }

void main() {unsigned char i;

while (1){

for (i = 0; i < 10; i++){

SEGMENT\_PORT = segment\_code[i]; // Send the //segment code to the port

delay(1000); // Delay for 1 second

 } } }

// Segment codes for displaying //numbers 0 to 9 on a common //anode display

// 0 = 0xC0, 1 = 0xF9, 2 = 0xA4, 3 = //0xB0, 4 = 0x99, 5 = 0x92, 6 = //0x82, 7 = 0xF8, 8 = 0x80, 9 =0x90

unsigned char segment\_code[] = {0xC0, 0xF9, 0xA4, 0xB0, 0x99, 0x92, 0x82, 0xF8, 0x80, 0x90};

void delay(unsigned int ms) {

unsigned int i, j;

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

for(j = 0; j < 1275; j++);

}void main() {

unsigned char i;

while(1) { for(i = 0; i < 10; i++) {

P2 = segment\_code[i]; // Output //the segment code to PORT2

delay(500); // Delayof 500ms

}  } }

**//PR4 fulldrive stepper** #include<reg51.h>

void msdelay(unsigned int time)

{ unsigned i,j ;

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

for(j=0;j<1275;j++);}

void main(){

while(1) {

P2 = 0x03;

//0011P2\_0=1,P2\_1=1,

//P2\_2 =0,P2\_3=0

msdelay(1);

P2 = 0x06; //0110

msdelay(1);

P2 = 0x0C; //1100

msdelay(1);

P2 = 0x09; //1001

msdelay(1); } }

**//halfdrivestep:** #include<reg51.h>

void msdelay(unsigned int time)

{ unsigned i,j ;

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

for(j=0;j<1275;j++); }

void main() {

while(1) {

P2 = 0x08; //1000

msdelay(1);

P2 = 0x0c; //1100

msdelay(1);

P2 = 0x04; //0100

msdelay(1);

P2 = 0x06; //0110

msdelay(1);

p2 = 0x02; //0010

msdelay(1);

p2 = 0x03; //0011

msdelay(1);

p2 = 0x01; //0001

msdelay(1);

p2 = 0x09; //1001

msdelay(1); } }

**//Experiment no. 7**

//Aim: To generate square wave //using timer of PIC18F with

#include<P18F4520.h>

void delay\_timer() {

T0CON = 0x08;

// Timer 0, 16-bit mode, no //prescaler

TMR0H = 0xFB;

// Value for 0.1 //ms delay

TMR0L = 0x50;

T0CONbits.TMR0ON = 1;

//Timer 0 On

while (INTCONbits.TMR0IF == 0); // Wait for Timer 0 interrupt flag

T0CONbits.TMR0ON = 0;

// Timer 0 Off

INTCONbits.TMR0IF = 0;

// Clear Timer 0 interrupt flag

} void main() {

TRISCbits.TRISC0 = 0;

// Configure RC0 as output

// (onPORTC)

while (1) {

PORTCbits.RC0 = 1;

// Set RC0 high

delay\_timer();

// Call delay function

PORTCbits.RC0 = 0;

// Set RC0 low

delay\_timer();

// Call delay function } }

**//Experiment no. 8**

**//Write a C program for the PIC18 //to transfer the letter 'G' serially //at 9600 baud,**

#include <P18F4520.h>

void main(void){

TXSTA=0x20;

//choose low baud rate, 8-bit

SPBRG=15;

//9600 baud rate/ XTAL 10 MHz

TXSTAbits.TXEN=1;

// Enable transmission

RCSTAbits.SPEN=1;

// Enable serial port (configures //TX/CK pins)

while (1) {

TXREG='G'; //place value in buffer

while (PIR1bits.TXIF==0);

//wait until all gone

} }

**//Experiment No 9:**

//DC Motor control and PWM

// usingC.

# include<p18f4520.h>

void main(){

TRISC = 0xFB;

// make CCP1 output Pin

TRISD = 0x80;

// make RD7 input Pin

CCP1CON = 0x3C;

//PWM Mode ,11 for DC1B1:B0

PR2 =100;

// set period to 100\*16/Fosc

T2CON = 0x01;

//4 Prescaler, no postscaler

while (1) {

if(PORTDbits.RD7==1)

CCPR1L=25;

//25% duty Cycle

else

CCPR1L=50; //50% duty Cycle

TMR2=0x0;// clear timer 2

PIR1bits.TMR2IF=0;

// Clear timer2 Flag

T2CONbits.TMR2ON=1;

// Start Timer 2

while(PIR1bits.TMR2IF==0);

//wait for end of period

} }

**//Expt.5: Interfacing LEDs, Switches, Buzzer and Relay**

#include <p18f4520.h>

//Include Controller specific .h

#include <delays.h>

#define BUZZER PORTAbits.RA3 //Buzzer connected to PORTA 3rd

#define SWITCH0 PORTBbits.RB0 //Switch0 connected to PORTB 0th

#define SWITCH1 PORTBbits.RB1 //Switch1 connected to PORTB 1st

void main(void) {

TRISA = 0x00;

// RA3, Output Direction

TRISB = 0xff;

// RB0, B1 Input Direction

TRISD = 0x00; // [RD0-3=LED’s] //[RD4,5=Relay1,2] Output Direction

PORTD = 0xff; // [RD0-3=LED’s] //[RD4,5=Relay1,2] Initialise as 0xff

while (1) {

if(!SWITCH1) // Condition for 1st switch { while (1) {

BUZZER =1; // Buzzer On

PORTD = 0x37;

// (Relay1=1, Relay2=1) & (LED's //sequence Left to Right=0111=7) Delay10KTCYx(100); // 400mSDelay

PORTD = 0x3B;

// (LED's sequence Left to

// Right=1011=B)

Delay10KTCYx(100);

PORTD = 0x3D;

Delay10KTCYx(100);

PORTD = 0x3E;

Delay10KTCYx(100);

if(!SWITCH0)

// check if 2nd switch is pressed

break; } }

else if(!SWITCH0)

// Condition for 2nd switch {

while (1) {

BUZZER =0; // Buzzer Off

PORTD = 0xcE;

// (Relay1=0,Relay2=0) & (LED's //sequence Right to Left=1110=E)

Delay10KTCYx(100);

PORTD = 0xcD;

// LED's sequence Right to //Left=1101=D

Delay10KTCYx(100);

PORTD = 0xcB;

Delay10KTCYx(100);

PORTD = 0xc7;

Delay10KTCYx(100);

if(!SWITCH1)

// check if 1st switch is pressed

break;

 }  } } }

**PR 6: LCD**

#include<p18f4520.h>

#pragma config OSC=HS

#pragma config PWRT=OFF

#pragma config WDT=OFF

#pragma config DEBUG=OFF, LVP=OFF

//Function Prototype declaration

void lcdcmd (unsigned char value) ;

void lcddata (unsigned char value);

void msdelay(unsigned int itime);

#define ldata PORTD

//Declare ldata variable for PORTD

#define rs PORTEbits.RE0

//Declare rs variable for pin RE0

#define rw PORTEbits.RE1 //Declare rw variable for pin RE1

#define en PORTEbits.RE2 //Declare en variable for pin RE2

void main(){

TRISD = 0x00;

//Set direction of PORTD as output

TRISE=0X00;

//set direction of PORTE as output

msdelay(50);

lcdcmd(0x38); //16x2 LCD

msdelay(50);

lcdcmd(0x0E);

// Display on Cursor on

msdelay(15);

lcdcmd(0x01);

//clear Display screen

msdelay(15);

lcdcmd(0x06);

//Increment cursor and shift right

msdelay(15);

lcdcmd(0x80); //Force cursor on //first row first position

lcddata('S'); //Display character 'S'

msdelay(50);

lcddata('P'); //Display character 'P'

msdelay(50);

lcddata('P'); //Display character 'P'

msdelay(50);

lcddata('U'); //Display character 'U'

msdelay(50);

lcdcmd(0xC0); //NEXT LINE

msdelay(15);

lcddata('S'); //Display character 'S'

msdelay(50);

lcddata('I'); //Display character 'P'

msdelay(50);

lcddata('T'); //Display character 'P'

msdelay(50);

lcddata('S'); //Display character 'U'

msdelay(50);

}

void lcdcmd (unsigned char value)

{

ldata=value;

//Send the command value to //PORTD

rs=0; //selection of command //register of LCD

rw=0; // write mode is selected

en=1; //Generate High to Low //pulse on Enable pin

msdelay(1);

en=0; }

void lcddata (unsigned char value)

{ ldata=value;

//Send the command value to //PORTD

rs=1;

//selection of DATA register of LCD

rw=0; // write mode is selected

en=1; //Generate High to Low //pulse on Enable pin

msdelay(1);

en=0; }

void msdelay (unsigned int itime) {

int i,j;

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

for(j=0;j<135;j++); } }