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```
MEMORY TRANSFER
#include <reg51.h>

void delay(int count) {
    int i, j;
    for (i = 0; i < count; i++) {
        for (j = 0; j < 200; j++) {
        }
    }
}

void main() {
    while (1) {
        P0 = 0xFF;
        delay(250);
        P0 = 0x00;
        delay(250);
    }
}
```
```
LED INTERFACING
#include <reg51.h>

void main(void) {
    unsigned char array[5] = {0x11, 0x22, 0x33, 0x44, 0x55};
    unsigned char newarray[5];
    int i;

    for (i = 0; i < 5; i++) {
        newarray[i] = array[i];
    }

    while (1);
}
```
```
```

INTERFACE STEPPER MOTOR

```
#include <reg51.h>

void delay();
sbit SW = P0^1;

void main() {
    while (1) {
        SW = 1;
        if (SW == 1) {
            P1 = 0x08;
            delay();
            P1 = 0x04;
            delay();
            P1 = 0x02;
            delay();
            P1 = 0x01;
            delay();
        } else {
            P1 = 0x01;
            delay();
            P1 = 0x02;
            delay();
            P1 = 0x04;
            delay();
            P1 = 0x08;
            delay();
        }
    }
}

void delay() {
    TMOD = 0x01;
    TL0 = 0x00;
    TH0 = 0xDC;
    TR0 = 1;
    while (TF0 == 0);
    TR0 = 0;
    TF0 = 0;
}
```

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INTERFACE LED RELAY BUZZER

```
#include <p18f4550.h>

extern void _startup(void);

#pragma code _RESET_INTERRUPT_VECTOR = 0x1000
void _reset(void) {
    _asm goto _startup _endasm
}
#pragma code

#pragma code _HIGH_INTERRUPT_VECTOR = 0x1008
void high_ISR(void) {
}
#pragma code

#pragma code _LOW_INTERRUPT_VECTOR = 0x1018
void low_ISR (void) {
}
#pragma code

void MsDelay (unsigned int time) {
    unsigned int i, j;
    for (i = 0; i < time; i++)
        for (j = 0; j < 700; j++);
}

#define lrbit PORTBbits.RB0
#define rlbit PORTBbits.RB1
#define buzzer PORTCbits.RC0
#define relay PORTCbits.RC1

void main() {
    unsigned char val=0;
    unsigned int k;

    INTCON2bits.RBPU=0;
    ADCON1 = 0x0F;
```
```

```
    TRISBbits.TRISB0=1;
    TRISBbits.TRISB1=1;
    TRISCbits.TRISC0=0;
    TRISCbits.TRISC1=0;

    TRISB = 0x03;
    PORTB = 0x10;
    buzzer = 0;

    relay = 0;

    while (1) {
        if (!(lrbit))
            val = 1;
        if (!(rlbit))
            val = 0;

        if (val) {
            buzzer = 1;
            relay = 1;
            LATB = LATB >>1;
            MsDelay(250);
            if (LATB == 0x10 | LATB == 0x00) {
                LATB = 0x80;
                MsDelay(250);
            }

        } else {
            buzzer = 0;
            relay = 0;
            LATB = LATB <<1;
            MsDelay(250);
            if (LATB == 0x80 | LATB == 0x00) {
                LATB = 0x10;
                MsDelay(250);
            }
        }
    }
}
'''
''''
```

INTERFACE LCD

```
#include <p18f4550.h>

#define LCD_DATA  PORTD
#define ctrl      PORTE
#define en        PORTEbits.RE2
#define rw        PORTEbits.RE1
#define rs        PORTEbits.RE0
#define BUSY      PORTDbits.RD7

void LCD_BUSY(void);
void LCD_cmd(unsigned char cmd);
void init_LCD(void);
void LCD_write(unsigned char data);
void LCD_write_string(static char *str);
extern void _startup(void);

#pragma code _RESET_INTERRUPT_VECTOR = 0x1000
void _reset(void) {
   _asm goto _startup _endasm
}
#pragma code

#pragma code _HIGH_INTERRUPT_VECTOR = 0x1008
void high_ISR(void) {
}
#pragma code

#pragma code _LOW_INTERRUPT_VECTOR = 0x1018
void low_ISR(void) {
}
#pragma code

void myMsDelay(unsigned int time) {
   unsigned int i, j;
   for (i = 0; i < time; i++)
      for (j = 0; j < 710; j++);
}

void init_LCD(void) {
   LCD_cmd(0x38);
   myMsDelay(15);
```

```
    LCD_cmd(0x01);
    myMsDelay(15);

    LCD_cmd(0x0C);
    myMsDelay(15);

    LCD_cmd(0x80);
    myMsDelay(15);
    return;
}

void LCD_cmd(unsigned char cmd) {
    LCD_DATA = cmd;
    rs = 0;
    rw = 0;
    en = 1;
    myMsDelay(15);
    en = 0;
    myMsDelay(15);
}

void LCD_write(unsigned char data) {
    LCD_DATA = data;
    rs = 1;
    rw = 0;
    en = 1;
    myMsDelay(15);
    en = 0;
    myMsDelay(15);
    return ;
}

void LCD_write_string(static char *str) {
    int i = 0;
    while (str[i] != 0) {
        LCD_write(str[i]);
        myMsDelay(15);
        i++;
    }
    return;
}

void main(void) {
```

```
    char var1[] = "WELCOME";
    ADCON1 = 0x0F;
    TRISD = 0x00;
    TRISE = 0x00;

    init_LCD();
    myMsDelay(50);
    LCD_write_string(var1);
    while (1);
}
```
```

SQUARE WAVE USING TIMER INTERRUPT

```
#include <p18f4550.h>
#include <stdlib.h>
void timer_isr(void);
extern void _startup(void);

#pragma code _RESET_INTERRUPT_VECTOR = 0x1000
void _reset(void) {
    _asm goto _startup _endasm
}
#pragma code

#pragma code _HIGH_INTERRUPT_VECTOR = 0x1008
void high_ISR(void) {
    _asm goto timer_isr _endasm
}
//
#pragma code
//

#pragma code _LOW_INTERRUPT_VECTOR = 0x1018
void low_ISR(void)
{
}
#pragma code

#pragma interrupt timer_isr
void timer_isr(void) {
    TMR0H = 0xFF;
    TMR0L = 0x00;
```
```

```
    PORTB = ~PORTB;
    INTCONbits.TMR0IF = 0;
}

void main() {
    ADCON1 = 0x0F;
    TRISB = 0;
    PORTB = 0xFF;
    T0CON = 0x00;
    TMR0H = 0xFF;
    TMR0L = 0x00;
    INTCONbits.TMR0IF = 0;
    INTCONbits.TMR0IE = 1;
    T0CONbits.TMR0ON = 1;
    INTCONbits.GIE = 1;
    while(1);
}
```
```

SERIAL PORT COMMUNICATION

```
#include <p18f4550.h>

#pragma udata
#pragma idata

unsigned char String[] = {"WELCOME\n\rPress any key from PC\n\r"};
unsigned char String1[] = {"\n\rUART Tested \n\r"};

extern void _startup(void);
void High_ISR(void);
void Low_ISR(void);

#pragma code _RESET_INTERRUPT_VECTOR = 0x1000
void _reset(void) {
    _asm goto _startup _endasm
}

#pragma code _HIGH_INTERRUPT_VECTOR = 0x1008
void _high_ISR(void) {
}
```
```

```
#pragma code _LOW_INTERRUPT_VECTOR = 0x1018
void _low_ISR(void) {
}

#pragma code

void TXbyte(char data) {
   while (TXSTAbits.TRMT == 0);
   TXREG = data;
}

void main() {
   unsigned char temp;
   unsigned char i = 0;

   SSPCON1 = 0;
   TRISCbits.TRISC7 = 1;
   TRISCbits.TRISC6 = 0;
   SPBRG = 0x71;
   SPBRGH = 0x02;
   TXSTA = 0x24;
   RCSTA = 0x90;
   BAUDCON = 0x88;

   temp = RCREG;
   temp = RCREG;

   for (i = 0; String[i] != '\0'; i++) {
      TXbyte(String[i]);
   }

   while (PIR1bits.RCIF == 0);

   for (i = 0; String1[i] != '\0'; i++) {
      TXbyte(String1[i]);
   }

   while (1);
}
```
```
```

DC MOTOR PWM

```
#include<p18f4550.h>
void myMsDelay(unsigned int time);
extern void _startup(void);
#pragma code _RESET_INTERRUPT_VECTOR=0x1000
void _reset(void)
{
	_asm goto _startup _endasm
}
#pragma code
#pragma code _HIGH_INTERRUPT_VECTOR=0x1008
void _high_ISR(void)
{
}
#pragma code _LOW_INTERRUPT_VECTOR=0x1018
void _low_ISR(void)
{
}
#pragma code
#pragma code
void main()
{
	TRISCbits.TRISC2=0;
	TRISCbits.TRISC6=0;
	TRISCbits.TRISC7=0;
	PR2=0x4A;
	CCPR1L=0x12;
	CCP1CON=0x3C;
	T2CON=0x07;
	PORTCbits.RC6=1;
	PORTCbits.RC7=0;
	while(1)
	{
		PR2=0x00;
		myMsDelay(1000);
		PR2=0x3F;
		myMsDelay(1000);
		PR2=0xBF;
		myMsDelay(1000);
		PR2=0xFF;
		myMsDelay(1000);
	}
}
void myMsDelay(unsigned int time)
```

```
{
      unsigned int i,j;
      for(i=0;i<time;i++)
        for(j=0;j<710;j++);
}
```