微机系统与接口实验-第一次实验报告

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测试题目:

使用单脉冲开关控制LED灯移动。

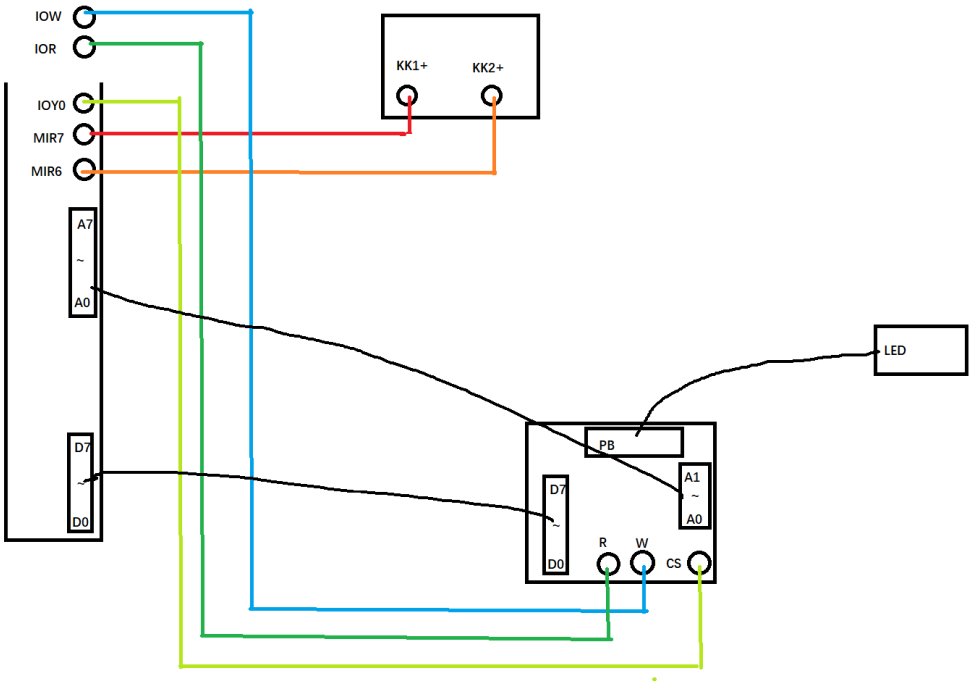
实验原理:

选用芯片:

1. 8255
2. 8259

连线:

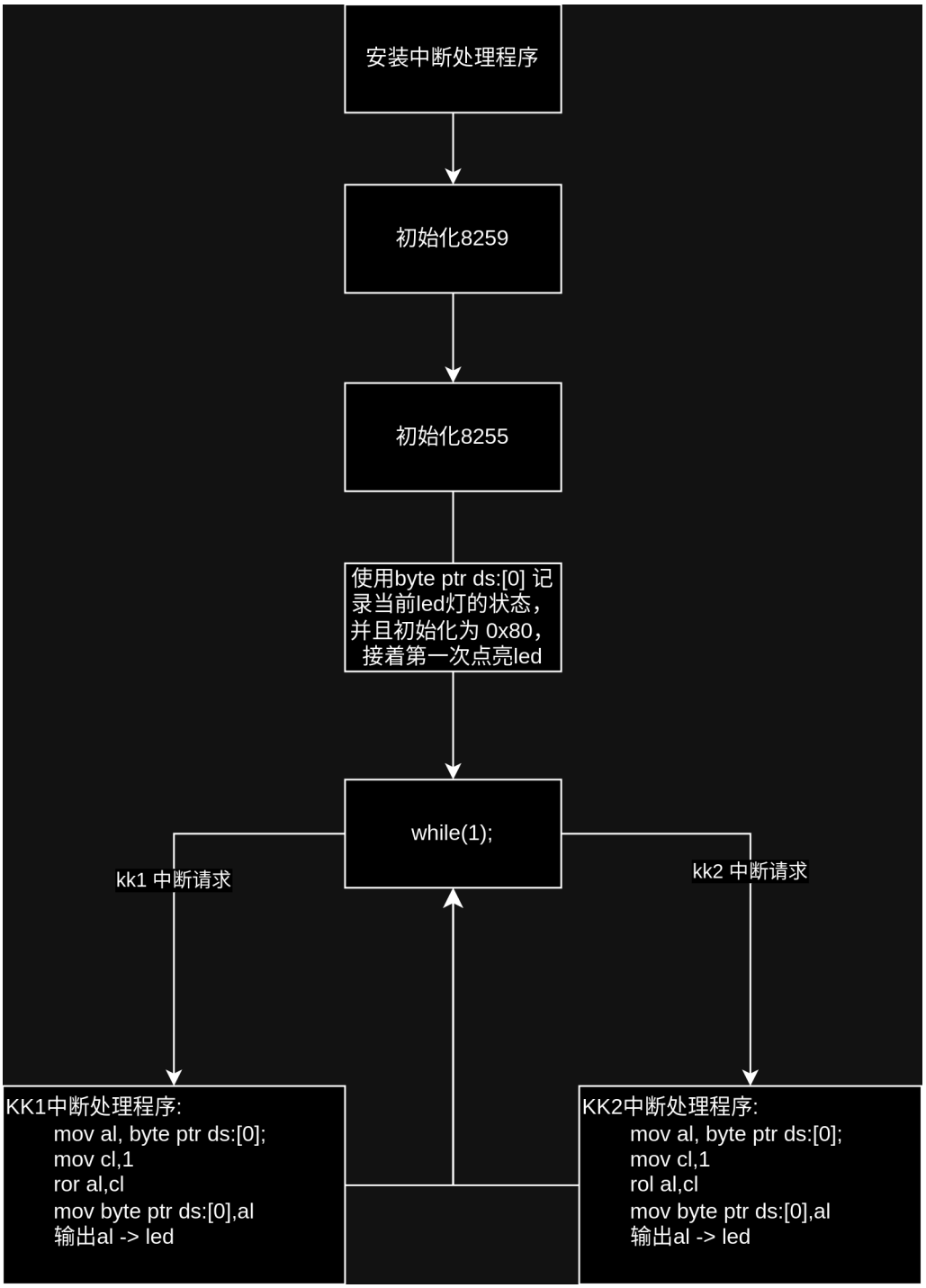
(大致是这样的)



基本原理:

kk1+,kk2+按下的时候上升沿触发中断请求。在中断处理程序内 输出相应的信号控制LED的状态

程序框图:


安装中断处理程序
初始化8259
初始化8255
使用byte ptr ds:[0] 记录当前led灯的状态，并且初始化为 0x80，接着第一次点亮led
while(1);
kk1 中断请求
kk2 中断请求
KK1中断处理程序:
mov al, byte ptr ds:[0];
mov cl,1
ror al,cl
mov byte ptr ds:[0],al
输出al -> led
KK2中断处理程序:
mov al, byte ptr ds:[0];
mov cl,1
rol al,cl
mov byte ptr ds:[0],al
输出al -> led

程序代码:

```
SSTACK  SEGMENT STACK
    DW 32 DUP(?)
SSTACK  ENDS

DATA    segment
        db 0 dup(128)
DATA    ends

CODE    SEGMENT
      ASSUME CS:CODE,DS:DATA

START:
    push ds
    xor ax,ax
    mov ds,ax

    ;install interrupt handler.
    ; IP : CS
    mov ax, OFFSET IRQ6_HANDLE
    mov si, 0038H
    mov [si], ax
    mov ax, cs
    mov si, 003AH
    mov [si], ax

    mov ax, OFFSET IRQ7_HANDLE
    mov si, 003CH
    mov [si], ax
    mov ax, CS
    mov si, 003EH
    mov [si], ax

    pop ds

    ;init 8259A
    cli

    mov al, 11H
    out 20H, al       ;ICW1

    mov al, 08H
    out 21H, al       ;ICW2

    mov al, 04H
    out 21H, al       ;ICW3

    mov al, 03H
    out 21H, al       ;ICW4
```

```
    mov al, 2FH       ;OCW1
    out 21H, al
    sti

    ;init 8255
    mov dx,606h
    mov al,80h
    out dx,al

    ;initial led statu
    mov ax,DATA
    mov ds,ax

    mov al,80h
    mov byte ptr ds:[00h],al

    ;first out led.
    mov dx,602h
    out dx,al


    __loop:
      jmp __loop

    ;中断处理程序
IRQ6_HANDLE:
    ;save context
    push ax
    push cx
    push dx

    mov ax,ds
    push ax

    ;get old led statu -> al
    mov ax,DATA
    mov ds,ax
    mov al,ds:[0]

    mov cl,1
    ror al,cl

    ;save led statu.
    mov byte ptr ds:[0],al

    ;out..
    mov dx,602h
    out dx,al

    ;restore ds
    pop ax
```

```
    mov ds,ax

    pop dx
    pop cx
    pop ax
    iret


IRQ7_HANDLE:
    ;save context
    push ax
    push cx
    push dx

    mov ax,ds
    push ax

    mov ax,DATA
    mov ds,ax
    mov al,ds:[0]
    mov cl,1
    rol al,cl

    ;save led statu.
    mov byte ptr ds:[0],al

    ;out..
    mov dx,602h
    out dx,al

    ;restore regs
    pop ax
    mov ds,ax

    pop dx
    pop cx
    pop ax
    iret


delay:
    push cx
    mov cx, 0FFFFH
AA0:
    push ax
    pop  ax
    loop AA0
    pop cx
    ret
```

```
CODE  ends
    ends  START
```