1.

;注意要实现优先级关系，即其中的一个中断优先级比另一个高

DATA SEGMENT

SIGN DB 00H

DATA ENDS

CODE SEGMENT

ASSUME CS:CODE,DS:DATA

START:

MOV AX,0000H

MOV DS,AX ;设置数据段地址

MOV DX,0646H

MOV AL,90H

OUT DX,AL ;初始化方式字，A口读入，B口输出

;设置中断向量

MOV AX,OFFSET MIR6

MOV SI,0038H

MOV [SI],AX

MOV AX,CS

MOV SI,003AH

MOV [SI],AX

MOV AX,OFFSET MIR7

MOV SI,003CH

MOV [SI],AX

MOV AX,CS

MOV SI,003EH

MOV [SI],AX

CLI ;关中断

;设置ICW1~ICW4和OCW1

MOV AL, 11H

OUT 20H, AL

MOV AL, 08H

OUT 21H, AL

MOV AL, 04H

OUT 21H, AL

MOV AL, 07H

OUT 21H, AL

MOV AL, 2FH

OUT 21H, AL

STI ;关中断

AA1: ;主程序，让红灯绿灯全亮

MOV DX, 0642H

MOV AL, 0FFH

OUT DX, AL

JMP AA1

MIR6:

MOV DX,0642H

MOV AL, 0FH

OUT DX, AL ;亮绿灯

CALL DELAY ;延时

CALL DELAY

CALL DELAY

CALL DELAY

CMP SIGN,01H ;判断SIGN是否为1

JZ RED ;若为1则跳到RED

JMP BACK ;否则直接中断返回

RED: ;当发生嵌套中断时，高优先级中断结束后回复到低优先级中断状态，即绿灯亮完后红灯亮

MOV DX, 0642H

MOV AL, 0F0H ;亮红灯

OUT DX, AL

BACK:

IRET

MIR7:

STI

MOV SIGN,01H ;SIGN置1，表示此时发生了MIR7中断

MOV DX,0642H

MOV AL,0F0H

OUT DX,AL ;亮红灯

CALL DELAY ;延时

CALL DELAY

CALL DELAY

CALL DELAY

MOV SIGN,00H ;执行完恢复标志位为0

IRET

;延时子程序

DELAY PROC NEAR

MOV CX,0FFFFH

LOOP $

RET

DELAY ENDP

CODE ENDS

END START

2.

DATA SEGMENT

SIGN DB 00H ;通过在中断中改变该变量的值控制移动方向

DATA ENDS

CODE SEGMENT

ASSUME CS:CODE,DS:DATA

START:

MOV AX, 0000H

MOV DS, AX ;设置数据段地址

MOV DX, 0646H

MOV AL, 90H

OUT DX, AL ;将方式字传入8255的控制口

MOV DX, 0642H

MOV AL,80H ;初始状态让D7亮，其它灭

OUT DX,AL ;B口输出80H,即点亮D7灯

;设置中断向量

MOV AX, OFFSET MIR6

MOV SI, 0038H

MOV [SI], AX

MOV AX, CS

MOV SI, 003AH

MOV [SI], AX

MOV AX, OFFSET MIR7

MOV SI, 003CH

MOV [SI], AX

MOV AX, CS

MOV SI, 003EH

MOV [SI], AX

CLI ;关中断

MOV AL, 11H

OUT 20H, AL

MOV AL, 08H

OUT 21H, AL

MOV AL, 04H

OUT 21H, AL

MOV AL, 07H

OUT 21H, AL

MOV AL, 2FH

OUT 21H, AL

STI ;开中断

MI:

CMP SIGN,00H

JZ MI

CMP SIGN,02H ;判断SIGN是否为2

JE AA2 ;若是则跳到AA2

AA1:

MOV DX, 0642H

IN AL,DX ;读B口

CMP AL,01H ;判断灯是否到达最右端

JE AAA1 ;如果是则直接回到MI判断SIGN，如果SIGN不变则灯的状态不变

ROR AL,1 ;否则指示灯右移

CALL DELAY ;延时

CALL DELAY

CALL DELAY

CALL DELAY

OUT DX,AL ;B口输出

JMP MI ;回到MI继续判断SIGN

AAA1:

MOV SIGN,00H

JMP MI

AA2:

MOV DX, 0642H

IN AL,DX

CMP AL,80H ;判断灯是否到达最左端

JE AAA2 ;如果是则直接回到MI判断SIGN，如果SIGN不变则灯的状态不变

ROL AL,1 ;否则指示灯左移

CALL DELAY ;延时

CALL DELAY

CALL DELAY

CALL DELAY

OUT DX,AL ;B口输出

JMP MI ;回到MI继续判断SIGN

AAA2:

MOV SIGN,00H

JMP MI

MIR6:

STI ;开中断

MOV SIGN,01H ;SIGN赋为0

IRET

MIR7:

STI ;开中断

MOV SIGN,02H ;SIGN赋为1

IRET

;延时子程序

DELAY PROC NEAR

MOV CX,0FFFFH

LOOP $

RET

DELAY ENDP

CODE ENDS

END START