```
.MODEL SMALL
.DATA

PA EQU 0D800H
PB EQU 0D801H
PC EQU 0D802H
CW EQU 0D803H

CLEAR DB 0E0H,0D0H,0B0H,70H
;Ports PA7-PA4
;GF     1110
;FF     1101
;SF     1011
;TF     0111

.CODE
MOV AX,@DATA
MOV DS,AX

MOV DX,CW
MOV AL,82H          ;port B is Input
OUT DX,AL

LEA SI,CLEAR
MOV AL,0F0H         ;clear SR flip flop PA4-PA7
MOV DX,PA
OUT DX,AL

NOREQ:
        CALL REQUEST      ;read input from Elevator Key
JZ NOREQ

SHR AL,01H          ;1110 ground
JNC GF
SHR AL,01H          ;1101 first
JNC FF
SHR AL,01H          ;1011 second
JNC SF
JMP TF                    ;0111 third

GF:
        CALL DELAY
        CALL RESET          ;stays at Ground floor
```

```
        JMP EXIT

FF:
        MOV CX,03H          ;initialize counter to 3
        CALL MOVEUP

        PUSH AX                     ;store ax = 1111 0011, al = 3
        CALL DELAY
        INC SI              ;si points to FF = 1101
        CALL RESET          ;stay at that floor
        MOV CX,03H          ;initialize counter to 3 again to move down
        POP AX

        CALL MOVEDOWN
        JMP EXIT

SF:
        MOV CX,06H
        CALL MOVEUP
        PUSH AX
        CALL DELAY
        ADD SI,02
        CALL RESET
        MOV CX,06H
        POP AX
        CALL MOVEDOWN
        JMP EXIT

TF:
        MOV CX,09H
        CALL MOVEUP
        PUSH AX
        CALL DELAY
        ADD SI,03H
        CALL RESET
        MOV CX,09H
        CALL MOVEDOWN
        POP AX
        JMP EXIT

EXIT:
        MOV AH,4CH
        INT 21H
```

```
;_____________________________________________

REQUEST PROC NEAR
        MOV DX,PB           ;read from Port B
        IN AL,DX
        AND AL,0FH
        CMP AL,0FH
        RET
REQUEST ENDP

RESET PROC NEAR         ;out SI to port A
        MOV DX,PA
        MOV AL,[SI]
        OUT DX,AL
        RET
RESET ENDP

MOVEUP PROC NEAR        ;out AL to port A
        MOV DX,PA
        MOV AL,0F0H
        L1:
                OUT DX,AL
                CALL DELAY
                INC AL
        LOOP L1
        OUT DX,AL
        RET
MOVEUP ENDP

MOVEDOWN PROC NEAR  ;out AL to port A
        MOV   DX,PA
        L2:
                OUT DX,AL
                CALL DELAY
                DEC AL
        LOOP L2
        OUT DX,AL
        RET
MOVEDOWN ENDP

DELAY PROC NEAR
        PUSH SI
        PUSH DI
```

```
        MOV SI,0FFFFH
        Outer:
                MOV DI,0FFFFH
                Inner:
                        DEC DI
                JNZ Inner
                DEC SI
        JNZ Outer

        POP DI
        POP SI
        RET
DELAY ENDP

END
```