# 8032 实验

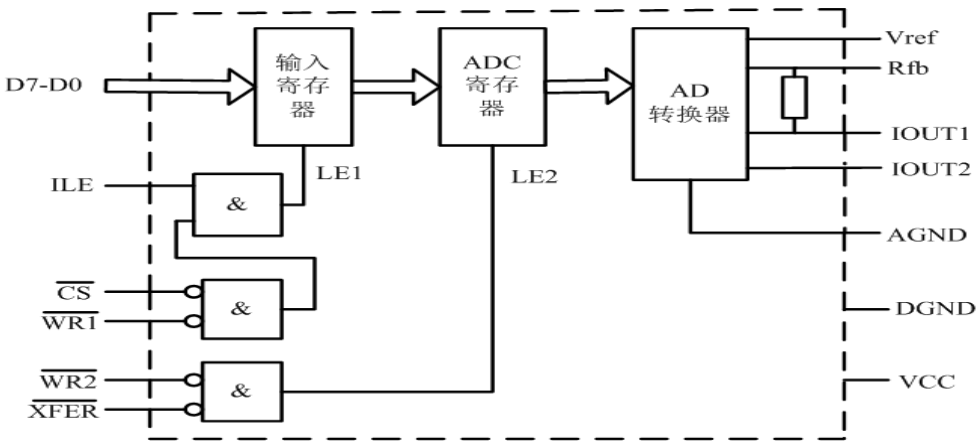
## 一、实验内容

1、使用软件延时方法实现锯齿波、方波、三角波、梯形波。

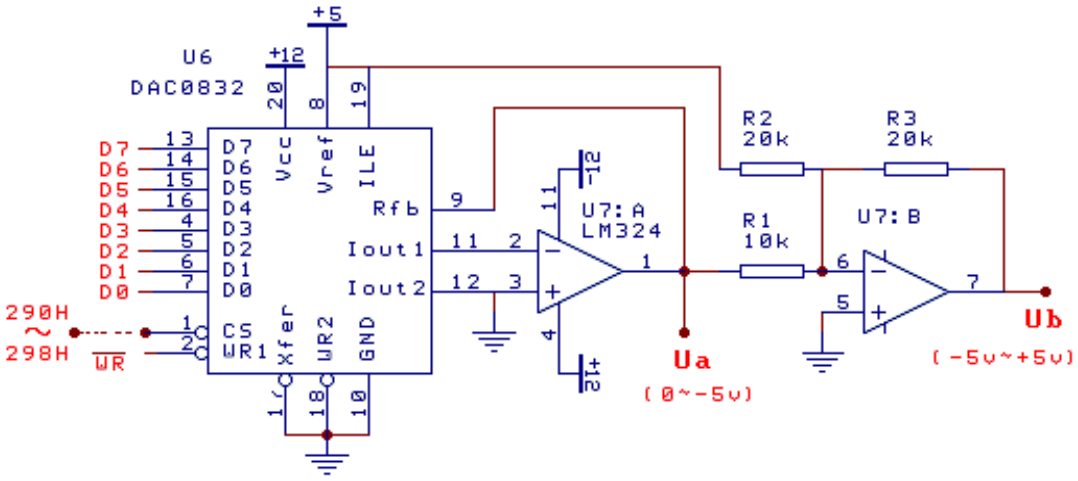
**2、使用 8253 产生 1ms 脉冲重新实现上述要求**

## 二、8032 知识

1. 结构示意图




2.8 位 D/A 转换器 DAC0832 输入数据与输出电压的关系参考实验原理图：




$$Ua = -\frac{U_{REF}}{256} \times N \qquad Ub = -\frac{U_{REF}}{256} \times N - 5$$

(UREF 表示参考电压,N 表示数数据)，这里的参考电压为P C 机的+ 5 V 电源。

产生锯齿波只须将输出到 DAC0832 的数据由 0 循环递增即可

## 三、参考程序

1. 延时法，16 次产生锯齿波，最高点-5V

```
DATA SEGMENT
DATA ENDS
STACK1 SEGMENT PARA STACK
        DW 20H DUP(0)
STACK1 ENDS
CODE SEGMENT
        ASSUME CS: CODE, DS:DATA, SS:STACK1
START:
        MOV   AX,   DATA
        MOV   DS,   AX

        MOV   AL,   00H
AGAIN:
        MOV   DX,  280H
        OUT   DX,  AL
        CALL  DELAY
        ADD   AL,  10H
        JMP   AGAIN
        MOV   AH, 4CH; 退出到 DOS，即结束程序运行
        INT   21H

DELAY   PROC   NEAR
        PUSH  CX
        MOV   CX,  0FFFFH
L1:     LOOP    L1
        MOV    CX, 0FFFFH
L2:     LOOP   L2
        POP   CX
        RET
DELAY   ENDP
CODE   ENDS
        END START
```

2．延时法，32 次产生锯齿波，最高点-5V

```
DATA SEGMENT
DATA ENDS
CODE SEGMENT
        ASSUME CS: CODE, DS:DATA
START:
        MOV   AX,   DATA
        MOV   DS,   AX

        MOV   AL,   00H
AGAIN:
        MOV   DX,  280H
        OUT   DX,  AL
        CALL  DELAY
        ADD   AL,  08H
        JMP   AGAIN
        MOV   AH,  4CH
        INT   21H

DELAY   PROC NEAR
        PUSH  CX
        MOV   CX,  0FFFFH
L1:     LOOP  L1
        MOV   CX,  0FFFFH
L2:     LOOP  L2
        POP   CX
        RET
DELAY   ENDP

CODE    ENDS
END   START
```

3. 延时法，16 次产生三角波，最高点-2.5V

```
DATA SEGMENT
DATA ENDS
CODE SEGMENT
        ASSUME CS: CODE, DS:DATA
START:
        MOV   AX,  DATA
        MOV   DS,  AX
        MOV   AL,   0H
DRAW_ASCEND_LINE:     ;画上升的边
        MOV   DX,  280H
        OUT   DX,  AL
        CALL  DELAY
        CMP   AL,  80H
        JZ      DRAW_DESCEND_LINE ;跳转到画下降的边
        ADD   AL,  08H
        JMP   DRAW_ASCEND_LINE:
DRAW_DESCEND_LINE: ;画下降的边
        SUB   AL,  08H
        MOV   DX,  280H
        OUT   DX,  AL
        CALL  DELAY
        CMP   AL,  00H
        JZ      DRAW_ASCEND_LINE ;跳转到画上升的边
        JMP   DRAW_DESCEND_LINE
        MOV   AH,4CH   ;退出到 DOS，即程序运行结束
        INT     21H
DELAY    PROC       NEAR
        PUSH   CX
        MOV   CX, 200H
L1:     LOOP   L1
        POP   CX
        RET
DELAY    ENDP
CODE     ENDS
END     START
```

4. //延时法，16 次产生梯形波，最高点-2.5V

```
DATA SEGMENT
DATA ENDS
CODE    SEGMENT
        ASSUME CS: CODE,     DS:DATA
START:
        MOV    AX,   DATA
        MOV    DS,   AX
        MOV    AL,   00H
DRAW_ASCEND_LINE:      ;画上升的腰
        MOV    DX,  280H
        OUT    DX,     AL
        CALL    DELAY
        CMP    AL,     80H
        JZ       DRAW_HORIZON_ LINE  ;跳转到画梯形上底
        ADD    AL, 08H
        JMP    DRAW_ASCEND_ LINE
DRAW_HORIZON_ LINE:     ;画梯形上底
        MOV    CX,  10H
AGAIN:
        OUT    DX,     AL
        CALL    DELAY
        LOOP    AGAIN
DRAW_DESCEND_ LINE:    ;画下降的腰
        SUB     AL,   08H
        MOV    DX,  280H
        OUT     DX,  AL
        CALL    DELAY
        CMP    AL,    00H
        JZ       DRAW_ASCEND_LINE:     ;跳转到画上升的腰
        JMP    DRAW_DESCEND_ LINE
        MOV    AH,    4CH    ;退出到 DOS，即程序结束
        INT      21H
DELAY    PROC NEAR
        PUSH   CX
        MOV    CX,  200H
L1:     LOOP    L1
```

```
        POP     CX
        RET
DELAY ENDP

CODE ENDS
        END START
```