# 汇编指令编程

**2021-4-21**

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## 要求

> 在内存RAM 30H-3EH 中存储着一个数组A[15]，计算其校验和，并将其保存在3FH中。编写汇编指令实现该功能（A[15]={27,5,32,47,38,235,79,17,187,58,23,35,211,104,9 } ;需要编程给RAM赋值）

## 思路

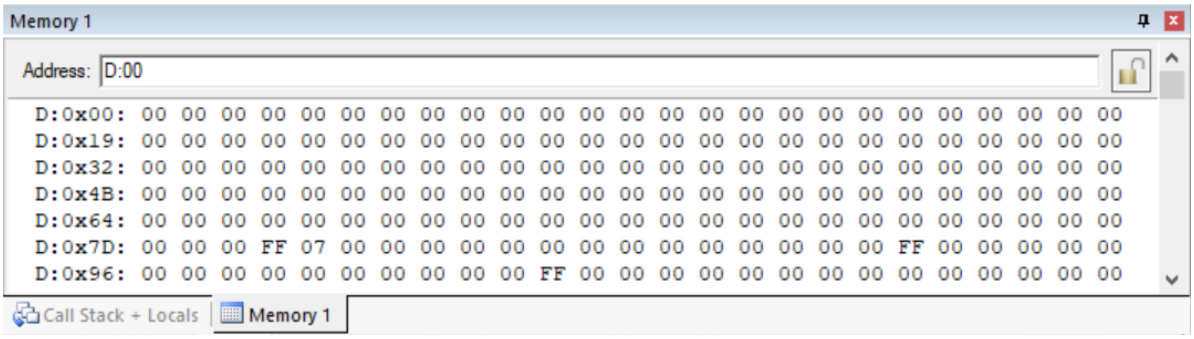
- 利用TABLE进行赋值
- 对每个值进行累加
- 用异或`XRL`每位取反

## 代码

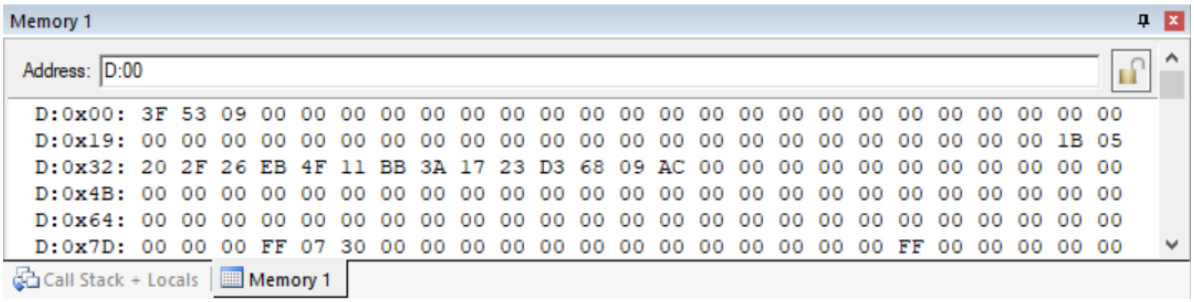
```
        ORG     00H
        MOV     DPTR, #TABLE    ;source pointer
        MOV     R0, #30H        ;target address
        MOV     R1, #0H         ;sum
        MOV     R3, #15         ;counter
        MOV     A, #0H          ;offset address
BACK:   MOVC    A, @A+DPTR      ;get a byte from source
        MOV     @R0,A           ;give the target address amplitude
        MOV     R2, A
        MOV     A, R1
        ADD     A, R2           ;addition
        MOV     R1, A
        INC     R0              ;increment source pointer
        MOV     A, R0
        CLR     C               ;clear bit c
        SUBB    A, #30H
        DJNZ    R3, BACK        ;keep doing for 15 bytes

        MOV     A, R1
        XRL     A, #0FFH        ;negate
        MOV     3FH, A          ;deposit value into 3FH

        ORG     30H
TABLE:  DB      27,5,32,47,38,235,79,17,187,58,23,35,211,104,9
        END
```

## Memory

- **运行前**


Memory 1
Address: D:00
D:0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D:0x19: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D:0x32: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D:0x4B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D:0x64: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D:0x7D: 00 00 00 FF 07 00 00 00 00 00 00 00 00 00 00 00 00 00 00 FF 00 00 00 00 00
D:0x96: 00 00 00 00 00 00 00 00 00 00 FF 00 00 00 00 00 00 00 00 00 00 00 00 00
Call Stack + Locals
Memory 1

- **运行后**


Memory 1
Address: D:00
D:0x00: 3F 53 09 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D:0x19: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 1B 05
D:0x32: 20 2F 26 EB 4F 11 BB 3A 17 23 D3 68 09 AC 00 00 00 00 00 00 00 00 00 00 00
D:0x4B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D:0x64: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D:0x7D: 00 00 00 FF 07 30 00 00 00 00 00 00 00 00 00 00 00 00 00 FF 00 00 00 00 00
Call Stack + Locals
Memory 1

**校验和为AC**