2152118 史君宝 汇编语言 第三次作业

一、题目：

1、建立一个程序
数据段中定义一个数据，按照十六进制的格式输出
使用换码指令进行

```
DATA  SEGMENT
    D1  DW  12345
DATA  ENDS

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

    MOV  AX, D1
    CALL DISP_AX
    MOV  DL, 'H'
    MOV  AH, 2
    INT  21H

    MOV  AH, 4CH
    INT  21H
```

```
DISP_AX:
    MOV  BX, 16
    MOV  CX, 4
ABC:
    CWD
    DIV  BX
    PUSH DX
    LOOP ABC
    MOV  CX, 4
ASD:
    POP  DX
    CMP  DL, 10
    JB   A48
    ADD  DL, 7
A48:
    ADD  DL, 48
    MOV  AH, 2
    INT  21H
    LOOP ASD
    RET

CODE  ENDS
END  START
```

输出结果显示：

```
C:\>second
3039H
```

二、回答下述问题，可以采用程序的方式验证

1、求出以下各数据与数据 62A0H 之和，并设置标志位 SF，CF，ZF 和 OF 的值

a、1234H

d、9D60H

程序代码：

```
DATA     SEGMENT            ;数据段定义
a DW 1234H
b DW 9D60H

DATA     ENDS
CODE     SEGMENT
ASSUME   CS:CODE,DS:DATA
START:   mov ax, data
         mov ds, ax

         mov ax, 62A0H
         add ax, a

         mov ax, 62A0H
         add ax, b

         MOV AH,4CH
         INT 21H
CODE     ENDS
END      START
```

执行过程：62A0H 和 1234H 加和

```
-t
AX=1CA5  BX=0000  CX=0027  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA6  IP=0005  NV UP DI PL NZ NA PO NC
1CA6:0005 B8A062          MOV     AX,62A0h
Trace Interrupt
-t
AX=62A0  BX=0000  CX=0027  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA6  IP=0008  NV UP DI PL NZ NA PO NC
1CA6:0008 03060000        ADD     AX,[0000]
Trace Interrupt
-t
AX=74D4  BX=0000  CX=0027  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA6  IP=000C  NV UP DI PL NZ NA PE NC
1CA6:000C B8A062          MOV     AX,62A0h
Trace Interrupt
```

结果： AX = 74D4

CF = NC = 0　　SF = PL = 0　　ZF = NZ = 0　　OF = NV = 0

执行过程：62A0H 和 9D60H 加和

```
-t
AX=52A0  BX=0000  CX=0027  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA6  IP=000F  NV UP DI PL NZ NA PE NC
1CA6:000F 03060200          ADD     AX,[0002]
Trace Interrupt
-t
AX=0000  BX=0000  CX=0027  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA6  IP=0013  NV UP DI PL ZR NA PE CY
1CA6:0013 B44C              MOV     AH,4Ch
Trace Interrupt
-t
AX=4C00  BX=0000  CX=0027  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA6  IP=0015  NV UP DI PL ZR NA PE CY
1CA6:0015 CD21              INT     21h  ;End Program
Trace Interrupt
```

结果： AX = 0000

CF = CY = 1　　SF = PL = 0　　ZF = ZR = 1　　OF = NV = 0

2 、下列程序段中的每条指令执行完后，AX 寄存器及 CF、SF、ZF 和 OF 的内容是什 么？

MOV AX,0

DEC AX

ADD AX,7FFFH

ADD AX,2

NOT AX

SUB AX,0FFFFH

ADD AX,8000H

SUB AX,1

AND AX,58D1H

程序原码：

```
 7
 8 DATA     SEGMENT              ;数据段定义
 9
10 DATA     ENDS
11 CODE     SEGMENT
12 ASSUME   CS:CODE,DS:DATA
13 START:   mov ax, data
14          mov ds, ax
15
16          MOV AX,0
17          DEC AX
18          ADD AX,7FFFH
19          ADD AX,2
20          NOT AX
21          SUB AX,0FFFFH
22          ADD AX,8000H
23          SUB AX,1
24          AND AX,58D1H
25
26          MOV AH,4CH
27          INT 21H
28 CODE     ENDS
29 END      START
```

刚开始：

```
-r
AX=0000  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1C95  ES=1C95  SS=1CA4  CS=1CA5  IP=0000  NV UP DI PL NZ NA PO NC
1CA5:0000 B8A51C          MOV     AX,1CA5h
```

```
-t
AX=1CA5  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1C95  ES=1C95  SS=1CA4  CS=1CA5  IP=0003  NV UP DI PL NZ NA PO NC
1CA5:0003 8ED8            MOV     DS,AX
Trace Interrupt
-t
AX=1CA5  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=0005  NV UP DI PL NZ NA PO NC
1CA5:0005 B80000          MOV     AX,0000h
Trace Interrupt
```

执行第一句：

MOV AX,0

```
-t
AX=0000  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=0008  NV UP DI PL NZ NA PO NC
1CA5:0008 48              DEC     AX
Trace Interrupt
```

AX = 0000

CF = NC = 0　　SF = PL = 0　　ZF = NZ = 0　　OF = NV = 0

DEC AX

```
-t
AX=FFFF  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=0009  NV UP DI NG NZ AC PE NC
1CA5:0009 05FF7F          ADD     AX,7FFFh
Trace Interrupt
```

AX = FFFF

CF = NC = 0　　SF = NG = 1　　ZF = NZ = 0　　OF = NV = 0

ADD AX,7FFFH

```
-t
AX=7FFE  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=000C  NV UP DI PL NZ AC PO CY
1CA5:000C 83C002          ADD     AX,02h
Trace Interrupt
```

AX = 7FFE

CF = CY = 1　　SF = PL = 0　　ZF = NZ = 0　　OF = NV = 0

ADD AX,2

```
-t
AX=8000  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=000F  OV UP DI NG NZ AC PE NC
1CA5:000F F7D0            NOT     AX
Trace Interrupt
```

AX = 8000

CF = NC = 0 SF = NG = 1 ZF = NZ = 0 OF = OV = 1

NOT AX

```
-t
AX=7FFF  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=0011  OV UP DI NG NZ AC PE NC
1CA5:0011 83E8FF          SUB     AX,0FFFFh
Trace Interrupt
```

AX = 7FFF

CF = NC = 0 SF = NG = 1 ZF = NZ = 0 OF = OV = 1

SUB AX,0FFFFH

```
-t
AX=8000  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=0014  OV UP DI NG NZ NA PE CY
1CA5:0014 050080          ADD     AX,8000h
Trace Interrupt
```

AX = 8000

CF = CY = 1 SF = NG = 1 ZF = NZ = 0 OF = OV = 1

ADD AX,8000H

```
-t
AX=0000  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=0017  OV UP DI PL ZR NA PE CY
1CA5:0017 83E801          SUB     AX,01h
Trace Interrupt
```

AX = 0000

CF = CY = 1 SF = PL = 0 ZF = ZR = 1 OF = OV = 1

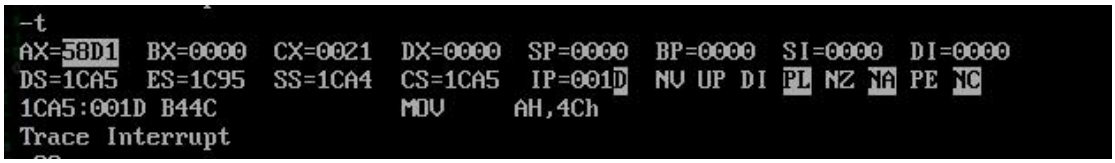
SUB AX,1

```
-t
AX=FFFF  BX=0000  CX=0021  DX=0000  SP=0000  BP=0000  SI=0000  DI=0000
DS=1CA5  ES=1C95  SS=1CA4  CS=1CA5  IP=001A  NV UP DI NG NZ AC PE CY
1CA5:001A 25D158          AND     AX,58D1h
Trace Interrupt
```

AX = FFFF

CF = CY = 1 SF = NG = 1 ZF = NZ = 0 OF = NV = 0

AND AX,58D1H



AX = 58D1

CF = NC = 0 SF = PL = 0 ZF = NZ = 0 OF = NV = 0