

1)

```
Mov cx,ax
Mov ax,bx
Mov bx,cx
```

2)

```
-r ax
AX 0000
:1
-r bx
BX 0000
:2
-r
AX=0001 BX=0002 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ NA PO NC
14F2:0100 0000      ADD    [BX+SI],AL          DS:0002=FF
-a 100
14F2:0100 xchg ax,bx
14F2:0102
-r
AX=0001 BX=0002 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ NA PO NC
14F2:0100 87C3      XCHG   AX,BX
-t
AX=0002 BX=0001 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI PL NZ NA PO NC
14F2:0102 0000      ADD    [BX+SI],AL          DS:0001=20
```

3)

```
-d ds:300
14F2:0300 03 00 00 00 00 00 00 00-00 00 00 00 00 00 00
-d ds:400
14F2:0400 04 00 00 00 00 00 00 00-00 00 00 00 00 00 00

14F2:0110 mov ax,[0300]
14F2:0113 xchg [0400],ax
14F2:0117 mov [0300],ax
```

```
-d ds:300
14F2:0300 04 00 00 00 00 00 00 00-00 00 00 00 00 00 00
-d ds:400
14F2:0400 03 00 00 00 00 00 00 00-00 00 00 00 00 00 00
```

4)

```
-a 100
14F2:0100 add ax,1
14F2:0103 inc ax
14F2:0104
-r
AX=0004 BX=0004 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ NA PO NC
14F2:0100 050100    ADD    AX,0001
-t
```

AX=0005 BX=0004 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0103 NV UP EI PL NZ NA PE NC
14F2:0103 40 INC AX

-t

AX=0006 BX=0004 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0104 NV UP EI PL NZ NA PE NC
14F2:0104 0300 ADD AX,[BX+SI] DS:0004=9A00

Görüldüğü gibi iki komutunda işlevi aynıdır fakat “add ax,1” komutu 3 byte yer kaplarken, “inc ax” komutu sadece 1 byte yer kaplar.

5)

Lea ax,[bx] komutu bx’in değerini ax’e atar.

Mov ax,[bx] komutu ise bx değerinin data segmentteki offset değerinin gösterdiği değeri ax’e atar. İki komutta hafızada 2 bytelık yer kaplıyor.

6)

-r ax

AX 0004

:1

-r bx

BX 0004

:2

-a 100

14F2:0100 adc ax,bx

14F2:0102

-r

AX=0001 BX=0002 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ NA PE NC

14F2:0100 11D8 ADC AX,BX

-t

AX=0003 BX=0002 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI PL NZ NA PE NC

14F2:0102 8B07 MOV AX,[BX] DS:0002=9FFF

Carry flag “0” iken “adc” komutu ax ve bx değerlerinin toplamını ax yazmacına atar.

-r ax

AX 0004

:1

-r bx

BX 0004

:2

-a 100

14F2:0100 adc ax,bx

14F2:0102

-r

AX=0001 BX=0002 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ NA PE CY

14F2:0100 11D8 ADC AX,BX

-t

AX=0004 BX=0002 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI PL NZ NA PE NC
14F2:0102 8B07 MOV AX,[BX] DS:0002=9FFF

Carry flag “1” iken “adc” komutu ax ve bx değerlerinin toplamına 1 ekleyip ax yazmacına atıyor.

7)

“neg” komutu bx değerinin 2 ye tümleyenini alıyor

-r

AX=0100 BX=0001 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ AC PO CY
14F2:0100 F7DB NEG BX

-t

AX=0100 BX=FFFF CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI NG NZ AC PE CY
14F2:0102 8B07 MOV AX,[BX] DS:FFFF=CD00

8)

-u 100

14F2:0100 8B1E0205 MOV BX,[0502]
14F2:0104 2B1E0305 SUB BX,[0503]
14F2:0108 A10105 MOV AX,[0501]
14F2:010B F7E3 MUL BX
14F2:010D 03060005 ADD AX,[0500]
14F2:0111 A30405 MOV [0504],AX

A= DS:500, B= DS:501, C=DS:502, D=DS:503, Z=DS:504

9)

MUL komutunda al ile cl değerlerini çarpıp ax yazmacına atıyor, IMUL komutunda ise iki değerin çarpımının 2 ye tümleyenini alıp ax yazmacına atıyor.

10)

a.

i)

14F2:0100 sar ax,1
14F2:0102 sar bx,1
14F2:0104

-r

AX=0040 BX=0041 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ NA PE NC
14F2:0100 D1F8 SAR AX,1

-t

AX=0020 BX=0041 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI PL NZ NA PO NC
14F2:0102 D1FB SAR BX,1

-t

AX=0020 BX=0020 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0104 NV UP EI PL NZ NA PO CY
14F2:0104 2B1E0305 SUB BX,[0503] DS:0503=0303

ii)

14F2:0100 shl ax,1

14F2:0102 shl bx,1

14F2:0104

-r

AX=0040 BX=0041 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ NA PO CY

14F2:0100 D1E0 SHL AX,1

-t

AX=0080 BX=0041 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI PL NZ NA PO NC

14F2:0102 D1E3 SHL BX,1

-t

AX=0080 BX=0082 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0104 NV UP EI PL NZ NA PE NC

14F2:0104 2B1E0305 SUB BX,[0503] DS:0503=0303

iii)

-r

AX=0020 BX=0020 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI NG NZ AC PO CY

14F2:0100 39D8 CMP AX,BX

-t

AX=0020 BX=0020 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI PL **ZR** NA PE **NC**

14F2:0102 D1E3 SHL BX,1

-r

AX=0080 BX=0082 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL **NZ** NA PE **NC**

14F2:0100 39D8 CMP AX,BX

-t

AX=0080 BX=0082 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI NG **NZ** AC PO **CY**

14F2:0102 D1E3 SHL BX,1

iv)

-r

AX=0040 BX=0041 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000

DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL NZ NA PE NC

14F2:0100 40 INC AX

-t

AX=0041 BX=0041 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0101 NV UP EI PL NZ NA PE NC
14F2:0101 39D8 CMP AX,BX
-t

AX=0041 BX=0041 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0103 NV UP EI PL ZR NA PE NC
14F2:0103 E32B JCXZ 0130

v)
-r
AX=0040 BX=0041 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI PL ZR NA PE NC
14F2:0100 87C3 XCHG AX,BX
-t

AX=0041 BX=0040 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI PL ZR NA PE NC
14F2:0102 39D8 CMP AX,BX
-t

AX=0041 BX=0040 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0104 NV UP EI PL NZ NA PO NC
14F2:0104 2B1E0305 SUB BX,[0503] DS:0503=0303

b.
-r
AX=FFF0 BX=0040 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0100 NV UP EI NG NZ NA PO NC
14F2:0100 D1F8 SAR AX,1
-t

AX=FFF8 BX=0040 CX=0000 DX=000C SP=FFEE BP=0000 SI=0000 DI=0000
DS=14F2 ES=14F2 SS=14F2 CS=14F2 IP=0102 NV UP EI NG NZ NA PO NC
14F2:0102 39D8 CMP AX,BX