

Addressing Modes

Lab Activity 4

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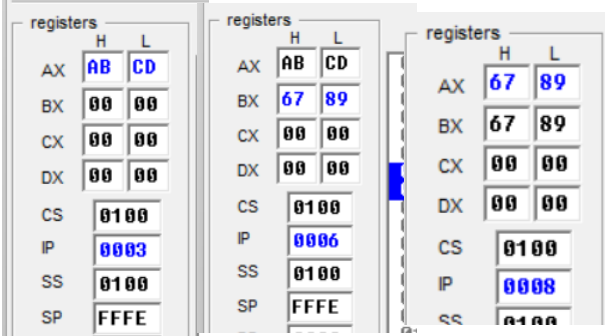
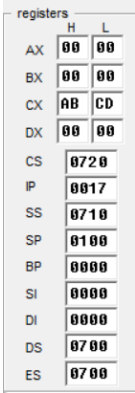
March 11, 2025

BSCpE III - GF

Run the following codes.

Make a screenshot of the following after executing the instructions.

- a. registers used
- b. memory location being accessed
  - i. memory
  - ii. variable

Addressing Mode	Screenshot
<pre>;Register Addressing mov ax,0ABCDh mov bx,06789h mov ax,bx</pre>	<div>Register</div> 
<pre>.model small .stack .data .code  ;Immediate Addressing MOV CX,0ABCDh</pre>	<div>Register</div> 



```
.model small
.stack
.data
.code

;Base-plus-index

MOV AX,@DATA
MOV DS,AX

MOV CX,0000H

MOV BX,1000h
MOV DI,01H
MOV [BX+DI],0EF01H
MOV CL,[BX+DI]
MOV CX,[BX+DI]
```

## Register and Memory

	registers	
	H	L
AX	07	20
BX	10	00
CX	EF	01
DX	00	00
CS	0720	
IP	002A	
SS	0710	
SP	0100	
BP	0000	
SI	0000	
DI	0001	
DS	0720	
ES	0700	

 Random Access Memory

bx+di

update

table

 **list**

0720-1001	01 EF 00 00 00 00 00 00-00 00 00 00 00 00 00 00	GN ..
0720-1011	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	....
0720-1021	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	....
0720-1031	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	....
0720-1041	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	....
0720-1051	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	....
0720-1061	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	....
0720-1071	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	....

```

; # 6 - Register Relative
mov  bx, 1000h
mov  [bx+01Ah], 0ABCDh
mov  cx, [bx+01Ah]

```

## Register and Memory

registers	
	H L
AX	00 00
BX	10 00
CX	AB CD
DX	00 00
CS	0720
IP	001F
SS	0710
SP	0100
BP	0000
SI	0000
DI	0000
DS	0700
ES	0700

 Random Access Memory

**bx+01Ah**

**update**

Year	Population (millions)	Urban population (millions)	Urban population (%)
1950	2.5	0.7	28
1955	2.8	0.9	32
1960	3.1	1.2	39
1965	3.5	1.6	46
1970	3.9	2.1	54
1975	4.3	2.6	60
1980	4.7	3.2	68
1985	5.1	3.8	75
1990	5.5	4.4	80
1995	5.9	5.0	85
2000	6.3	5.6	89
2005	6.7	6.2	93
2010	7.1	6.8	96
2015	7.5	7.4	99
2020	7.9	8.0	100

- list

0700:101A	CD AB 00 00 00 00 00 00-00	00 00 00 00 00 00 00 00
0700:102A	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00 00
0700:103A	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00 00
0700:104A	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00 00
0700:105A	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00 00
0700:106A	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00 00
0700:107A	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00 00
0700:108A	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00 00

```
;base relative+index
.model small

.data
array db 1,2,3,4

.code
mov ax,@data
mov ds,ax

mov dl,01h
mov bx,offset array

mov cx,04h
mov si,00h
loop1:
    mov array[bx+si],dl
    inc si
    loop loop1
```

Register, Memory and Array/Variable (Before and After)

Before:

Register:

registers		
	H	L
AX	00	00
BX	00	00
CX	01	19
DX	00	00
CS	0720	
IP	0000	
SS	0710	
SP	0100	
BP	0000	
SI	0000	

Memory:

Random Access Memory		
0720:0000	update	table list
0720:0000	01 02 03 04 08 20 07 8E-D8 B2 01 00 00 00 09 04	.....
0720:0010	00 BE 00 00 88 10 46 E2-FB 90 90 90 90 90 90	.....
0720:0020	90 90 90 90 90 90 90 90 90 90 90 F4 00 00	.....
0720:0030	00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0720:0040	00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0720:0050	00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0720:0060	00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....

Array:

variables		
size: byte	elements: 4	
edit	show as: hex	
ARRAY 01h, 02h, 03h, 04h		

After:

Register:

registers		
	H	L
AX	07	20
BX	00	00
CX	00	00
DX	00	01
CS	0720	
IP	0020	
SS	0710	
SP	0100	
BP	0000	
SI	0004	
DI	0000	
DS	0720	
ES	0700	

Memory:

Random Access Memory			
0720:0000	update	table	list
0720:0000	01 01 01 01 D8 20 07 8E-D8 D2 01 D8 00 00 D9 04	0000	..U
0720:0010	00 BE 00 00 88 10 46 E2-FB 90 90 90 90 90 90	0001	..P
0720:0020	90 90 90 90 90 90 90 90 90 90 F4 00 00	0002	.....
0720:0030	00 00 00 00 00 00 00 00 00 00 00 00	0003	.....
0720:0040	00 00 00 00 00 00 00 00 00 00 00 00	0004	.....
0720:0050	00 00 00 00 00 00 00 00 00 00 00 00	0005	.....
0720:0060	00 00 00 00 00 00 00 00 00 00 00 00	0006	.....
0720:0070	00 00 00 00 00 00 00 00 00 00 00 00	0007	.....

ARRAY

variables

size: byteelements: 4

editshow as: hex

ARRAY 01h, 01h, 01h, 01h