

Addressing Modes

Definition:

Addressing mode = the way the operand is specified.

	Addressing Modes	Source	D/S	Note	
	Immediate	Constant	S	Destination cannot be any segment register CS, DS, SS or ES.	
	Register	Register	D, S	IP not allowed	
Memory	Direct	Byte ptr[address]	Either D or S	Source and destination cannot both be memory.	
		Word ptr[address]			
	Indirect	Register			[BX], [BP], [DI], [SI]
		Based			[BX + d] or [BP + d]
		Indexed			[DI + d] or [SI + d]
		Based-Indexed			[BX or BP + SI or DI + d]

Table 5.1: Addressing modes

Physical Address:

$$PA = DS \times 10H + EA$$

Addressing Mode	Example	Source operand		
		Assuming: DS = 1000H, BX = 0200H, SI = 0300H		
		Type	Address Generation	Address
Register	MOV AX, BX	Register	-	-
Immediate	ADD AX, 0F7H	Immed.	-	-
Direct	MOV AX, [1234H]	Mem.	DS x 10H + 1234H	11234H
Register-Indirect	MOV AX, [BX]	Mem.	DS x 10H + 0200H	10200H
Based	SUB AX, [BX+06]	Mem.	DS x 10H + 0200H + 0006H	10206H
Indexed	INC [SI+06]	Mem.	DS x 10H + 0300H + 0006H	10306H
Based-Indexed	MOV AX, [BX+SI+06]	Mem.	DS x 10H + 0200H + 0300H + 0006H	10506H

Table 5.2: Physical address calculation in the different addressing modes