

INC, DEC, NOT, NEG instructions

3. Third group of Arithmetic and Logic instructions contains: INC, DEC, NOT, NEG

These types of operands are supported:

| | |
|-----|----------------|
| INC | <u>operand</u> |
| DEC | REG |
| NOT | memory |
| NEG | |

REG 8-bit : AH, AL, BL, BH, CH, CL, DH, DL.

REG 16-bit : AX, BX, CX, DX, SI, DI, BP, SP.

memory: [BX], [BX+SI+7], variable, etc...

INC, DEC instructions affect these flags only: **ZF, SF, OF, PF, AF**.

NOT instruction does not affect any flags!

NEG instruction affects these flags only: **CF, ZF, SF, OF, PF, AF**.

INC instruction: Increment by 1

Algorithm

Operand =operand + 1

Ex.

MOV DI ,7000h ; DI = 7000h

INC DI ; DI = 7001h

DEC instruction: Decrement by 1

Algorithm

Operand =operand - 1

Ex.

MOV CL , 0Fh ; CL=0Fh

DEC CL ; CL = 0E1h

NOT instruction: reverse (Invert) each bit of operand (one's complement).

Algorithm

- if bit is 1 turn it to 0.
- if bit is 0 turn it to 1.

Ex.

MOV byte ptr[9000], FF h ; [9000]= FF

NOT byte ptr[9000] ; [9000]= 00

NEG instruction: make operand negative (two's complement). Actually it reverses each bit of operand and then adds 1 to it.

Algorithm

- Invert all bits of the operand
- Add 1 to inverted operand

Ex1.

MOV AL, 05 ; AL = 05

NEG AL ; AL= FBh

NEG AL ; AL = 05

4. *Fourth group of Arithmetic and Logic instructions contains:*
ASCII and decimal adjustment (DAA , DAS , AAA , AAD, AAM , AAS).