8086 Microprocessor Addressing Modes

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ADDRESSING MODES OF 8086

The different ways in which a source operand is denoted in an instruction is known as **addressing modes**. There are 8 different addressing modes in 8086 programming –

1) Immediate Addressing Mode

2) Register Addressing Mode

3) Direct Memory Addressing Mode

4) Register Based Indirect Addressing Mode

5) Register Relative Addressing Mode

6) Base Indexed Addressing Mode

7) Relative Based Indexed Addressing Mode

8) Implied Addressing Mode

- **Immediate Addressing Mode:**

The addressing mode in which the data operand is a part of the instruction itself is known as immediate addressing mode.

- Example:

MOV CX, 4929 H,

ADD AX, 2387 H,

MOV AL, FFH

- **Register Addressing Mode:**

It means that the register is the source of an operand for an instruction.

- Example:

MOV CX, AX ; copies the contents of the 16-bit AX register into the 16-bit CX register).

ADD BX, AX

- **Direct addressing mode**

The addressing mode in which the effective address of the memory location is written directly in the instruction.

- Example:

MOV AX, [1592H], MOV AL, [0300H]

- **Register indirect addressing mode**

This addressing mode allows data to be addressed at any memory location through an offset address held in any of the following registers: BP, BX, DI & SI.

- Example

MOV AX, [BX] ; Suppose the register BX contains 4895H, then the contents ; 4895H are moved to AX

ADD CX, {BX}

- **Based Addressing Mode:**

In this addressing mode, the offset address of the operand is given by the sum of contents of the BX/BP registers and 8-bit/16-bit displacement.

- Example

MOV DX, [BX+04], ADD CL, [BX+08]

- **Indexed addressing mode:**

In this addressing mode, the operands offset address is found by adding the contents of SI or DI register and 8-bit/16-bit displacements.

- Example

MOV BX, [SI+16], ADD AL, [DI+16]

- **Based-index addressing mode:**

In this addressing mode, the offset address of the operand is computed by summing the base register to the contents of an Index register.

- Example:
- ADD CX, [AX+SI], MOV AX, [AX+DI]

- **Based indexed with displacement mode:**

In this addressing mode, the operands offset is computed by adding the base register contents. An Index registers contents and 8 or 16-bit displacement.

- Example:
- MOV AX, [BX+DI+08], ADD CX, [BX+SI+16]

Thank You