**Addressing Modes of 8086 Microprocessor**

An instruction performs specific operation on the specified data (operand).Hence the programmer must specify the required data (operand) for an instruction.

The required operand may be placed in the accumulator, in a general purpose register or in a memory location

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

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Immediate addressing mode

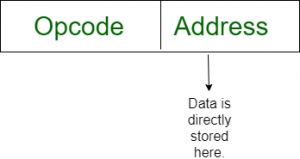
The addressing mode in which the data operand is a part of the instruction itself is known as immediate addressing mode.

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

ADD AL, BL

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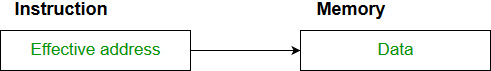
Direct addressing mode

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

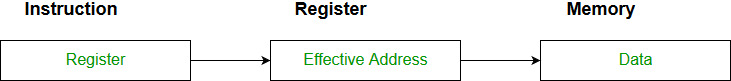
This addressing mode allows data to be addressed at any memory location through an offset address held in any of the following registers: BP, BX, DI & SI.

Example

MOV AX, [BX] ; Suppose the register BX contains 4895H, then the

Contents of 4895H memory location 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 AL, [BX+05]

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]

DD 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

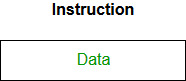
MOV AX, [BX+DI+08]

ADD CX, [BX+SI+16]

Implied addressing mode

In implied addressing the operand is specified in the instruction itself. In this mode the data is 8 bits or 16 bits long and data is the part of instruction.Zero address instruction are designed with implied addressing mode.

Example:  CLC (used to reset Carry flag to 0)

[](https://media.geeksforgeeks.org/wp-content/cdn-uploads/Addressing_Modes_2.jpg)