ADDRESSING MODES OF 8085

Addressing Modes of 8085

- To perform any operation, we have to give the corresponding instructions to the microprocessor.
- In each instruction, programmer has to specify 3 things:
  - Operation to be performed.
  - Address of source of data.
  - Address of destination of result.

Addressing Modes of 8085

- The method by which the address of source of data or the address of destination of result is given in the instruction is called **Addressing Modes.**
- The term addressing mode refers to the way in which the operand of the instruction is specified.

Types of Addressing Modes

- Intel 8085 uses the following addressing modes:
  1. Memory Addressing
  2. Register Addressing Mode
  3. Immediate Addressing Mode
  4. Implicit Addressing Mode

Memory Addressing

- One of the operands is a memory location
- Depending on how address of memory location is specified, memory addressing is of two types

– Direct addressing

– Indirect addressing

Direct Addressing Mode

- In this mode, the address of the operand is given in the instruction itself.

LDA 2500 H	Load the contents of memory location 2500 H in accumulator.

- LDA is the operation.
- 2500 H is the address of source.
- Accumulator is the destination.

Example

- 16-bit Address of the memory location is specified in the instruction directly
- Examples
- **LDA 2050H** ;load A with contents of memory location with address 2050H
  STA 3050H ;store A with contents of memory location with address 3050H

Register Indirect Addressing Mode

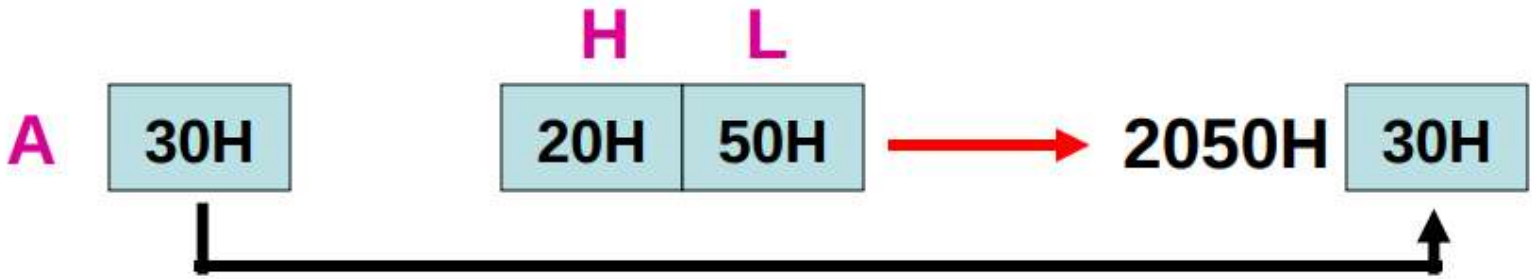
- In this mode, the address of operand is specified by a register pair.

MOV A, M	Move data from memory location specified by H-L pair to accumulator.

- MOV is the operation.
- M is the memory location specified by H-L register pair.
- A is the destination.

Example

- A memory pointer register is used to store the address of the memory location
- Example
- **MOV M, A** ;copy register A to memory location whose address is stored in register pair HL


H
L
A
30H
20H
50H
2050H
30H

Register Addressing Mode

- In this mode, the operand is in general purpose register.

MOV A, B	Move the contents of register B to A.

- MOV is the operation.
- B is the source of data.
- A is the destination.

Example

Operands are one of the internal registers of 8085

MOV A, B

ADD C

Immediate Addressing Mode

- In this mode, the operand is specified within the instruction itself.

MVI A, 05 H	Move 05 H in accumulator.

- MVI is the operation.
- 05 H is the immediate data (source).
- A is the destination.

Example

- Value of the operand is given in the instruction itself
- MVI A, 20H
- LXI H, 2050H
- ADI 30H
- SUI 10H

Implicit Addressing Mode

- If address of source of data as well as address of destination of result is fixed, then there is no need to give any operand along with the instruction.

CMA	Complement accumulator.

- CMA is the operation.
- A is the source.
- A is the destination.