Assembly language

is a low-level programming language for microprocessors and other programmable devices. It is not just a single language, but rather a group of languages.

Overview of 8085 Programming Model

- ## 1. Six general-purpose Registers

B, C, D, E, H, L. Each one stores 8-bit data. They can be combined as register pairs to perform 16-bit operations (BC, DE, HL). These registers are used to store or copy temporary data by using instructions during the execution of the program.

- ## 2. Accumulator Register

It is identified by name A. This register is a part of ALU. It is 8-bit data storage. It can perform arithmetic and logical operations. The result of an operation is stored in accumulator.

⊙ 3. Flag Register

This is also a part of ALU. 8085 has five flags named:

- Zero flag (Z)
- Carry flag (CY)
- Sign flag (S)
- Parity flag (P)
- Auxiliary Carry flag (AC)

Instruction Set of 8085:

i. Data Transfer (Copy) Operations:

1) MVI

To move any 8 bit data into any register (A, B, C, D, E, H, L).

2) MOV

Move the content of one register to another.

3) STA

Store the content of (A) in a memory location.

4) LDA

Load the content of a memory location into (A).

5) HLT

Terminate the execution of the program.

- **Examples:**

Program 1:

Write a program to store 8-bit data in memory (location 2010).

Code:

MVI A,20H

STA 2010H

HLT

Program 2:

Write a program to store (32H) in memory (2011) and store (4H) in memory (2012).

Program 3:

Write a program to store 75H in register B, 89H in register C, then exchange the content of registers B, C.

Program 4: homework

Write a program to store 07H in location 2000, 89H in location 2001 then exchange the content of two memory locations.

v

ii. Arithmetic Operations

1) ADD

It adds the value in register A with a value present in any other register and save the result in register A.

2) SUB

It subtracts the value in register A with a value present in any other register and save the result in register A.

3) ADI

It adds the value given with the value in register A.

4) SUI

It subtracts the value in register A from the value given directly.

Examples:

Program 1:

Write a program to save the value 02H to the location 2013 and enter the value 03H to register C, then add the two values and save the result in location 2014.

C

Program 2:

Write a program to insert the value 09H into register B and enter the value 04H into register E , then find the output result of : B-E and save it to the location 2010.

c

Program 3:

Write a program to add two 8- bit numbers and store 8-bit result in register C.

c

Program 4:
Find the following:

B
12

➕

2011
2

➕

4 H =

2012

end

Program 5: homework
Find the following:

C
23

$-$

2010
10

$=$

2011