

CAO LAB

Experiment : 2

NAME : MD WASIF || ENROL: 19UICS002

1. Addition of two 8 bit numbers using Memory Location (With Carry)

Algorithm:

1. Load data from memory into register or register pair.
2. Move data from register into accumulator.
3. Add the data to accumulator.
4. Initialize one register with 00 for carry.
5. Jump the next step if no carry.
6. Increment carry register by 1.
7. Store data from accumulator in separate memory location.
8. Move carry to accumulator and Store data from accumulator in separate memory location.
9. Terminate the program.

Program:



Observation:

Input: F9(in 4020), 3B(in 4021)

Output: 34(stored in 4031) and carry 01(stored in 4030).

Result:

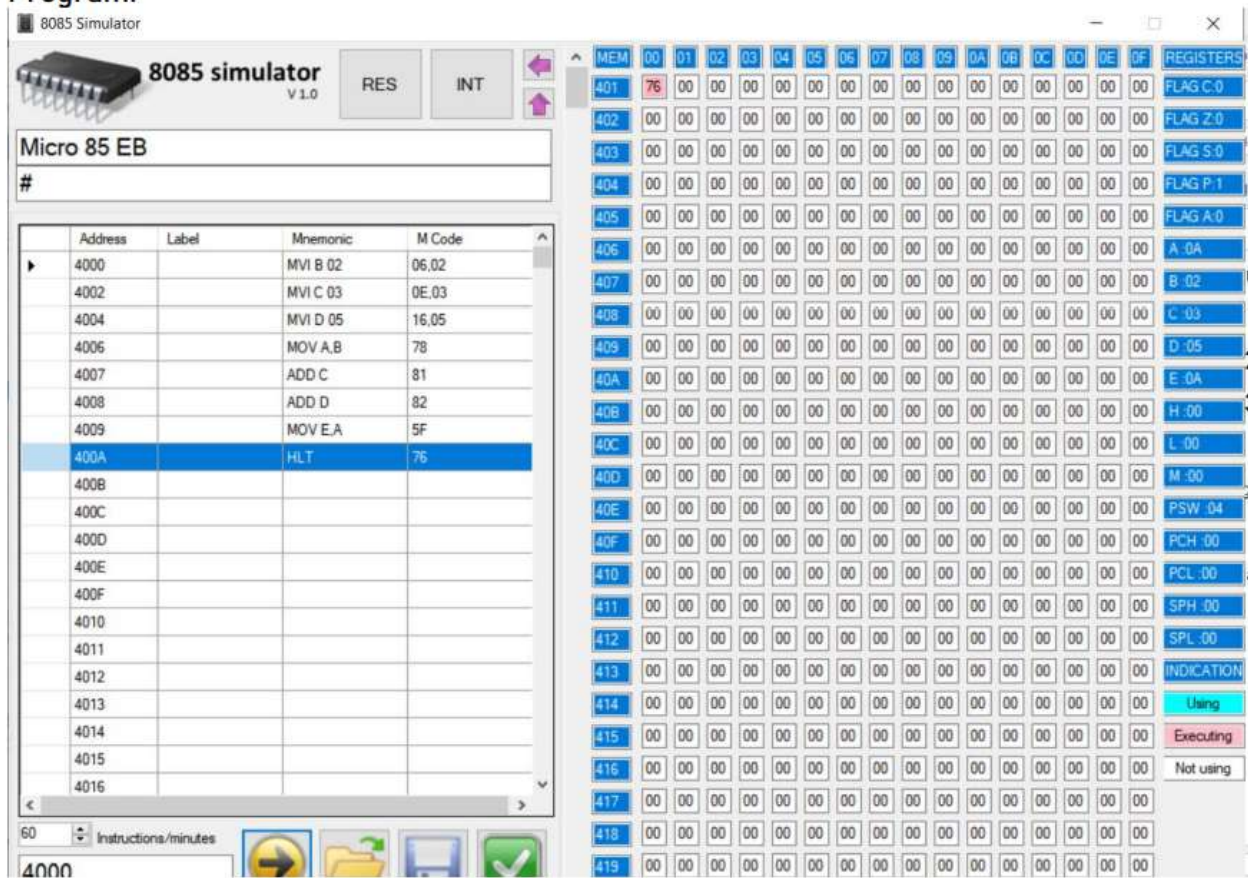
Thus the addition of two 8 bit numbers from memory with carry is executed.

2. Addition of two 8 bit numbers using Register (With Carry)

Algorithm :

1. Initialize data into two registers.
2. Move data from one register to accumulator.
3. Add the other register to accumulator.
4. Store data from accumulator in separate register.
5. Terminate the program.

Program:



Observations :

Input: 02(in B) and 03(in C)

Output : 0A(stored in A and E)

Result:

Thus the addition of two 8 bits numbers in register is executed.

3. Write a program to subtract two 8-bit numbers using Memory location

Algorithm:

1. Load data from memory into register or register pair.
2. Move data from one register into accumulator.
3. Subtract the other register from accumulator.
4. Store data from accumulator in separate memory location.
5. Terminate the program.

Program:

The screenshot shows the 8085 Simulator V1.0 interface. The main window displays a table of memory locations and their contents. The program is loaded into memory starting at address 4000. The program code is as follows:

Address	Label	Mnemonic	M Code
4000		LHLD 4010	2A,10,40
4003		MOV A,H	7C
4004		SUB L	95
4005		STA 4012	32,12,40
4008		HLT	76
4009			
400A			
400B			
400C			
400D			
400E			
400F			
4010		RLC	07
4011		INX B	03
4012		STAX B	02
4013			
4014			
4015			
4016			
4017			

The right side of the simulator shows the registers and flags. The registers are: A: 04, B: 00, C: 00, D: 00, E: 00, H: 07, L: 03, M: 00, PSW: 00, PCH: 00, PCL: 00, SPH: 00, SPL: 00, INDICATION: Using, Executing, Not using.

Observation:

Input: 07(in 4010), 03(in 4011)

Output: 04(stored in 4012)

Result:

Thus the subtraction of two 8 bit numbers from memory is executed.

4. Write a program to subtract two 8-bit numbers using Register.

Algorithm:

1. Initialize data into two registers.
2. Move data from one register into accumulator.
3. Subtract the other register from accumulator.
4. Store data from accumulator in separate register.
5. Terminate the program.

Program:

8085 Simulator V1.0

Micro 85 EB

#

Address	Label	Mnemonic	M Code
4007		HLT	76
4008			
4009			
400A			
400B			
400C			
400D			
400E			
400F			
4010			
4011			
4012			
4013			
4014			
4015			
4016			
4017			
4018			
4019			
401A			

60 Instructions/minutes

4000

REGISTERS

MEM	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	REGISTERS
401	76	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FLAG C:0
402	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FLAG Z:0
403	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FLAG S:0
404	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FLAG P:0
405	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FLAG A:0
406	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	A:04
407	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	B:09
408	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	C:05
409	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	D:04
40A	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	E:00
40B	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	H:00
40C	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	L:00
40D	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	M:00
40E	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	PSW:00
40F	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	PCH:00
410	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	PCL:00
411	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	SPH:00
412	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	SPL:00
413	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	INDICATION
414	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	Using
415	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	Executing
416	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	Not using
417	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
418	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
419	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
41A	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	

Observation:

Input: 09(in B), 05(in C)

Output: 04(stored in A and D)

Result:

Thus the subtraction of two 8 bit numbers from registers is executed.