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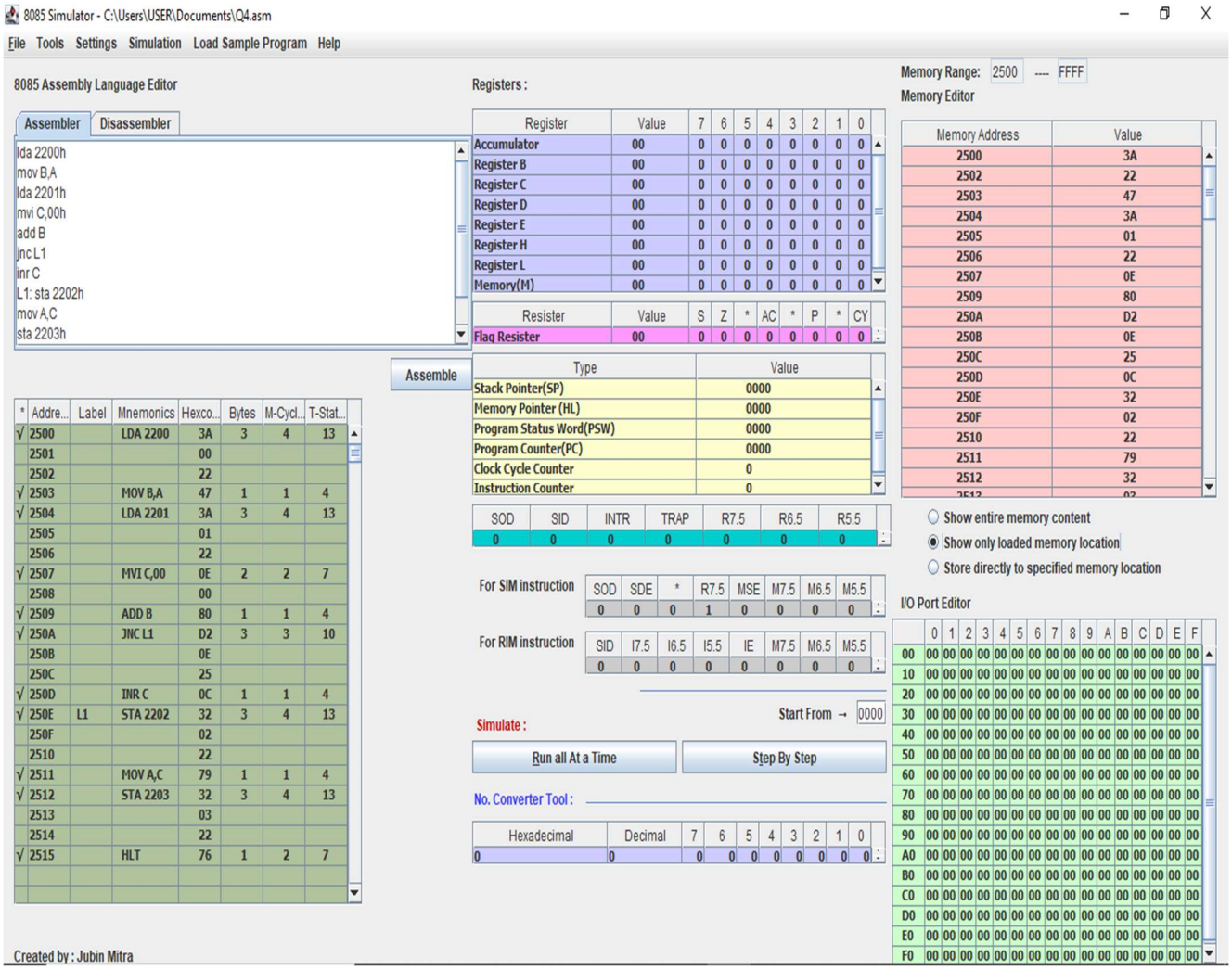
BATCH : BCSE 2nd Year (Lateral)

ROLL NO: 302010501003

Microprocessor lab in ASSIGNMENT #1:

1.Load the contents of the memory locations 2200H into registers .Add these register and store the results in memory location 2202 H & 2203 H.

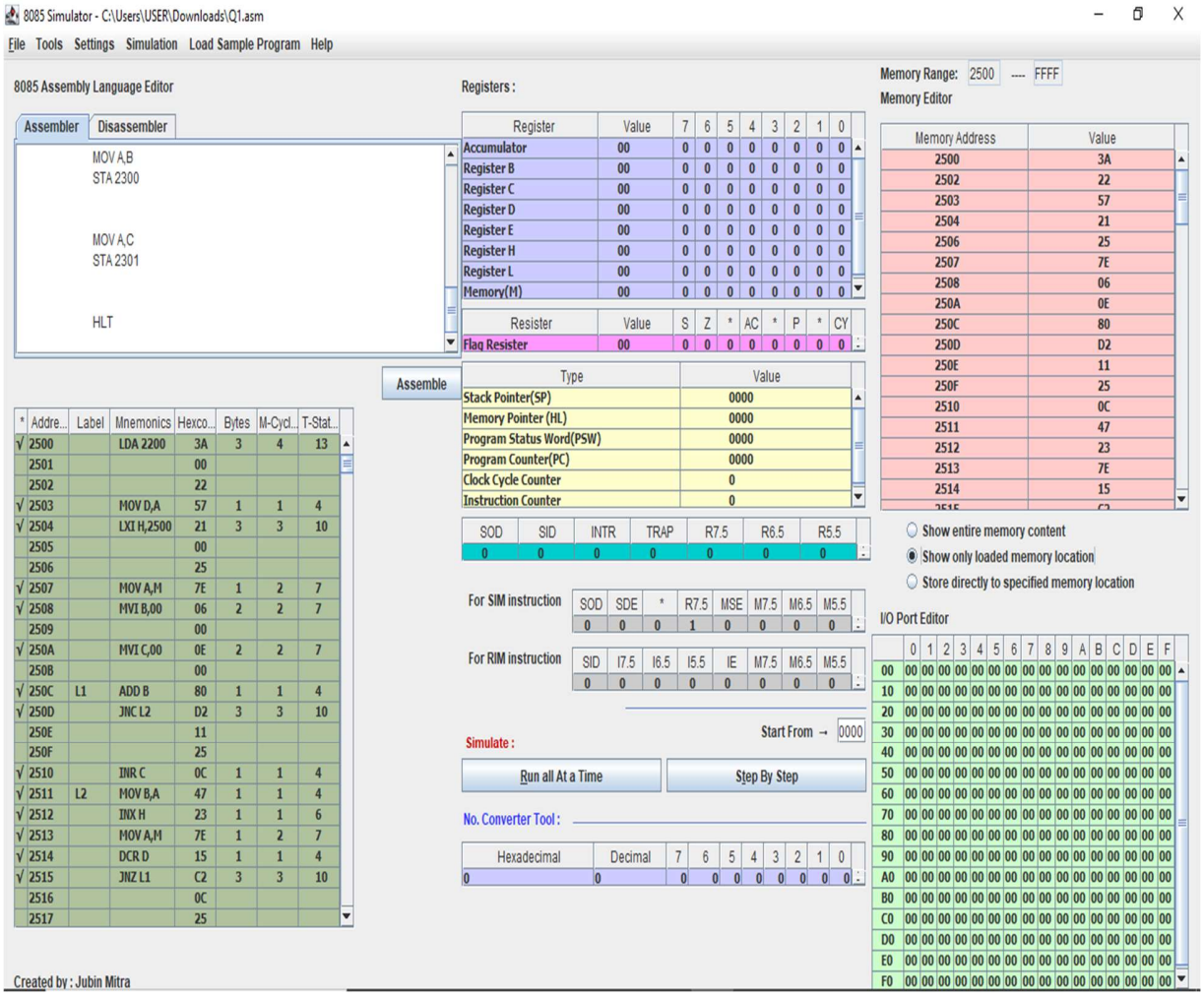
SL NO	ADDRESS	OPCODE IN HEX	LABEL	INSTRUCTIONS	COMMENTS
1	2200	3A,00,22		LDA 2200	Load accumulator direct address of 2200H.
2	2203	47		MOV B,A	Move accumulator to b register.
3	2204	3A,01,22		LDA 2201	Load accumulator direct into memory location 2201H.
4	2207	0E,00		MVI C,00	Move immediate value 2200 memory address into c register.
5	2209	80		ADD B	Add register b with accumulator
6	220A	D2,0E,22		JNC L1	When carry flag is 0,its jump.
7	220D	0C		INR C	Increase c ,when carry is 1.
8	220E	32,02,22	L1	STA 2202	Store the accumulator memory address 2202H.
9	2211	79		MOV A,C	Move c register to accumulator
10	2212	32,03,22		STA 2203	Store accumulator memory address 2203H
11	2215	76		HLT	Termintate the program



2.Find the sum of N numbers stored in consecutive locations staring from 2500 H.The value of N is stored in 2200 H. Store the results in location 2300 H and 2301 H.

SL NO	ADDRESS	OPCODE IN HEX	LABEL	INSTRUCTION	COMMENTS
1	2500	3A,00,22		LDA 2200	Load accumulator direct memory location 2200H .
2	2503	57		MOV D ,A	Move accumulator to d register.

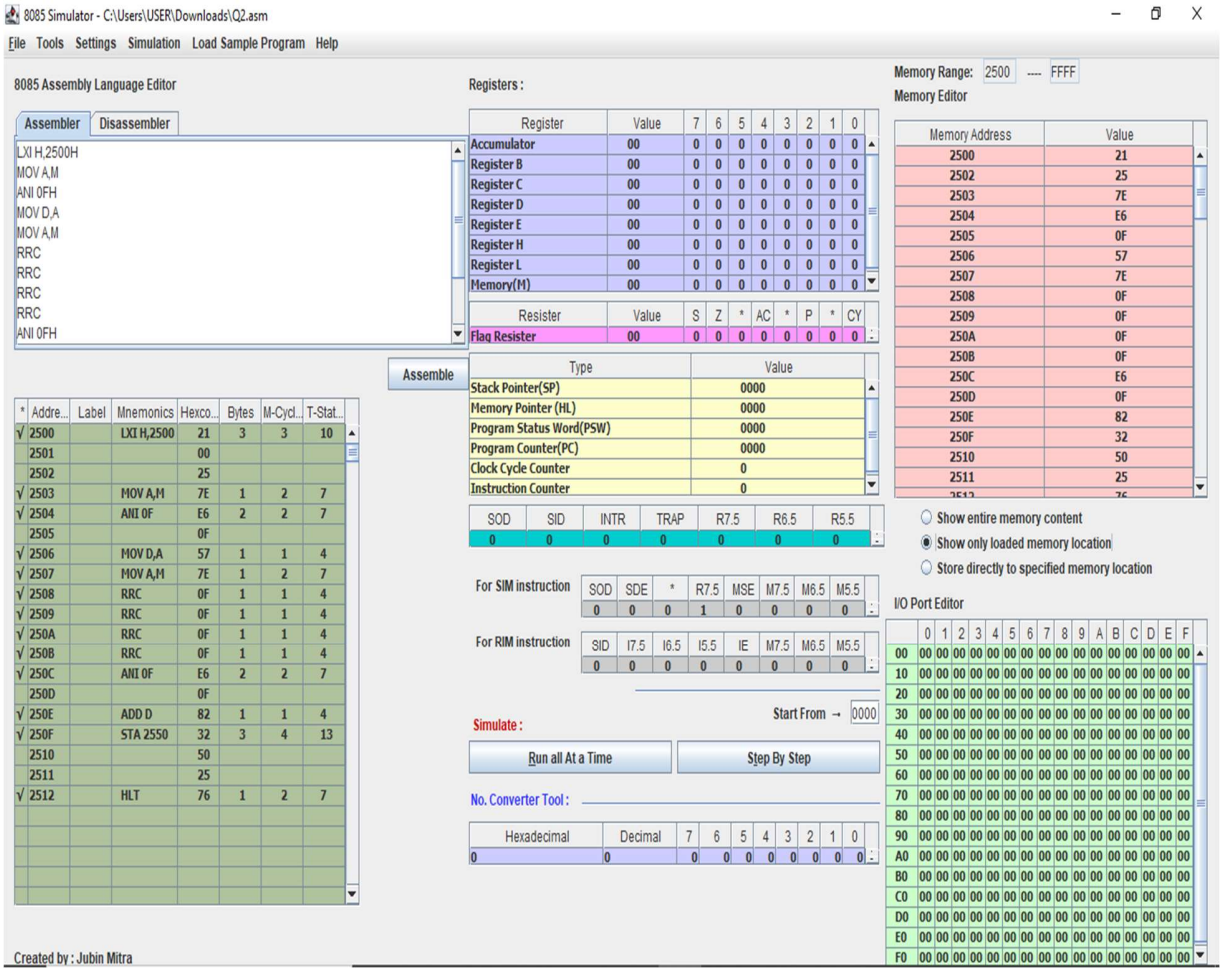
3	2504	21,00,25		LXI H,2500	Load first instruction address 2500H.
4	2507	7E		MOV A,M	Move memory address to accumulator.
5	2508	06,00		MVI B,00	Move immediate to b register.
6	250A	0E,00		MVI C,00	Move immediate to c register.
7	250C	80	L1	ADD B	Add b register with accumulator.
8	250D	D2,11,25		JNC L2	Jump when carry is O.
9	2510	0C		INRC	Increment c when carry is 1.
10	2511	47	L2	MOV B,A	Move accumulator to b register.
11	2512	23		INX H	Increase HL pair.
12	2513	7E		MOV A,M	Move memory location to accumulator.
13	2514	15		DCR D	Decrement d register.
14	2515	C2,0C,25		JNZ L1	Jump when z flag is 0.
15	2518	78		MOV A,B	Move b register to accumulator
16	2519	32,00,23		STA 2300	Store accumulator memory location 2300
17	251C	79		MOV A,C	Move c register to accumulator
18	251D	32,01,23		STA 2301	Store accumulator memory location 2301
19	2520	76		HLT	Terminate the program.



3.Find the sum of the least significant 4 bits and most significant 4 bits of a byte stored in memory location 2500H. store the result in 2550 H.

SL NO	ADDRESS	OPCODE IN HEX	LABEL	INSTRUCTION	COMMENTS
1	2500	21,00,25		LXI H,2500H	Contents of memory location 2500H into HL register pair.
2	2503	7E		MOV A,M	Move memory address to accumulator A=M[HL]
3	2504	E6,0F		ANI 0FH	A=A&(0000 1111)
4	2506	57		MOV D,A	D=A
5	2507	7E		MOV A,M	A=M[HL]
6	2508	0F		RRC	Rotate bits of accumulator right without carry bit

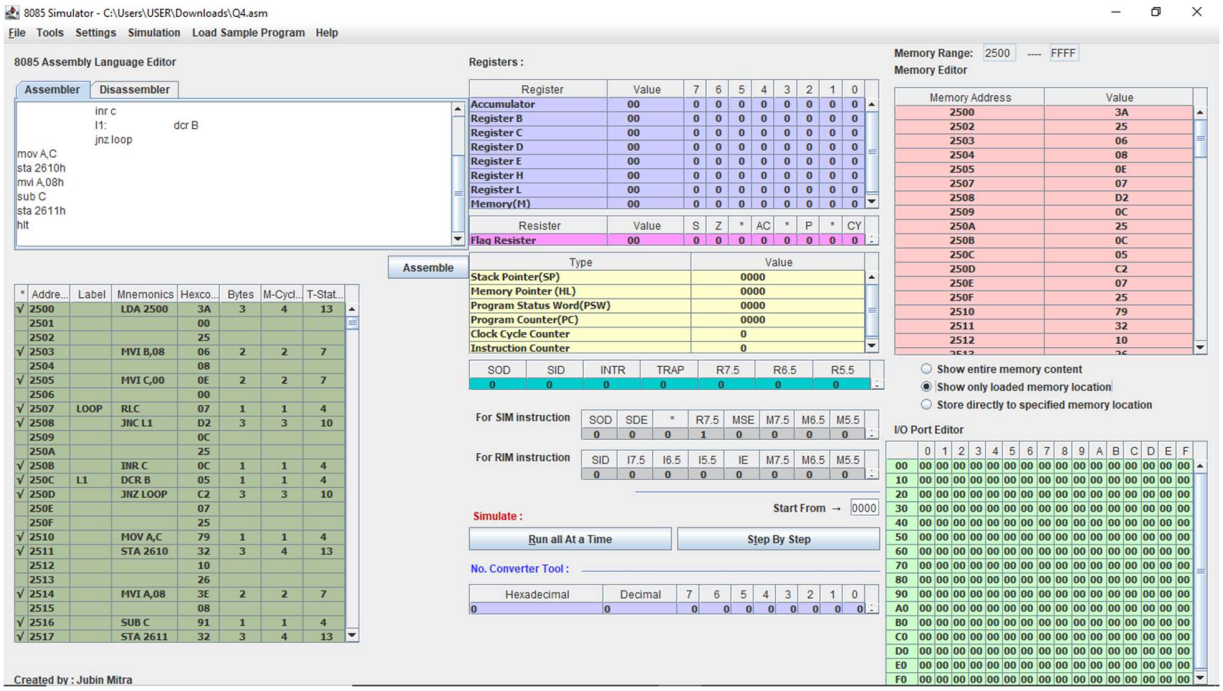
7	2509	0F		RRC	Rotate bits of accumulator right without carry bit
8	250A	0F		RRC	Rotate bits of accumulator right without carry bit
9	250B	0F		RRC	Rotate bits of accumulator right without carry bit
10	250C	E6,0F		ANI 0FH	A=A&(0000 1111)
11	250E	82		ADD D	A=A+D
12	250F	32,50,25		STA 2550H	Load the contents of the accumulator in the address location 2550H ,M[2550]
13	2512	76		HLT	Stop the program.



4.Write a program to count the 1's and 0's of a byte stored in 2500 H.Store in 2610 H,and 2511 H,respectively.

SL NO	ADDRESS	OPCODE IN HEX	LABEL	INSTRUCTIONS	COMMENTS
1	2500	21,00,25		LXI H,2500H	Contents of memory location 2500H into HL register pair.
2	2503	7E		MOV A,M	A=M
3	2504	06,08		MVI B,00H	B=08H

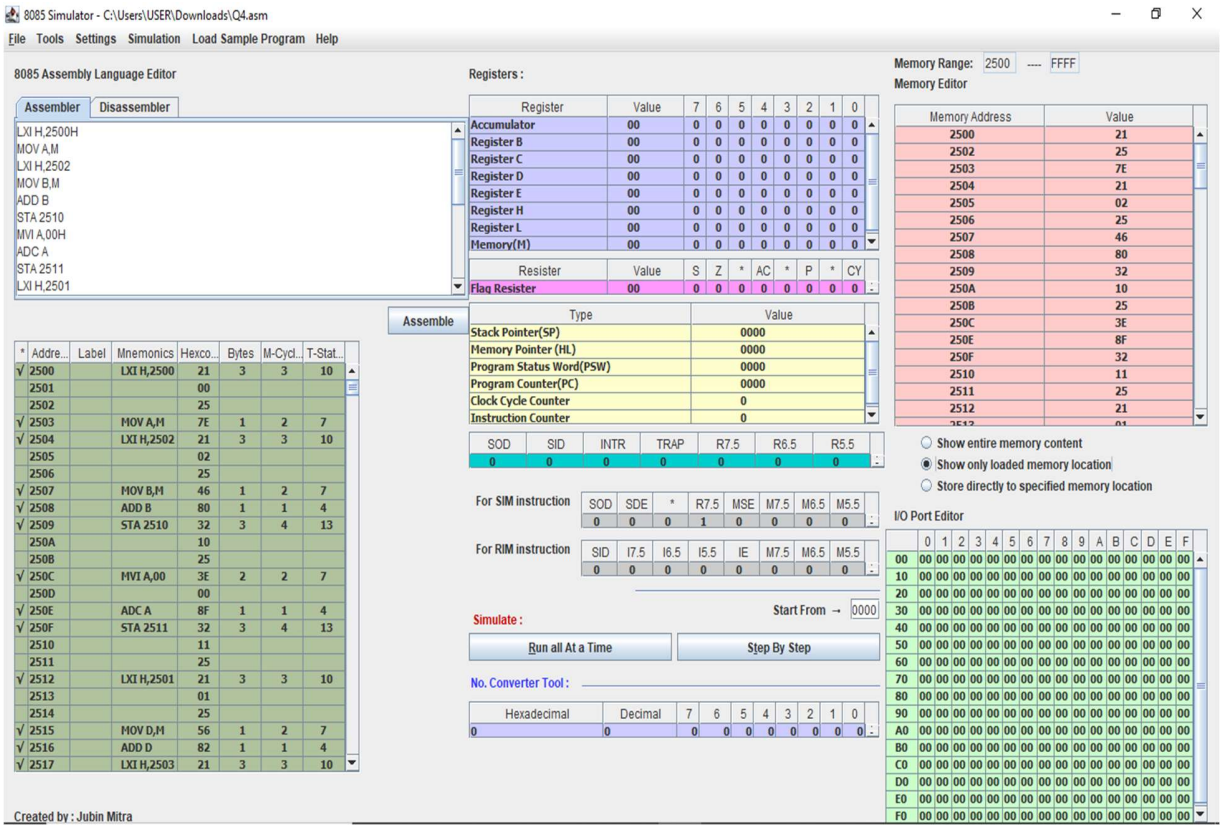
4	2506	16,00		MVI D,00H	D=00H
5	2508	07	LOOP	RLC	Rotate accumulator left without carry.
6	2509	D2,0D,00		JNC SKIP	If no carry is generated the jump to label skip
7	250C	14		INR D	D=D+1[To get the one count]
8	250D	05	SKIP	DCR B	B=B-1
9	250E	C2,08,00		JNZ LOOP	If contents of B is not zero then jump to the label LOOP,we need to continue this 8 times to get the count of all set bits
10	2511	7A		MOV A,D	A=D
11	2512	32,10,26		STA 2610H	Load the contents of the accumulator in the address location 2610H,M[2610]=A(store the number of ones)
12	2515	47		MOV B,A	B=A
13	2516	3E,08		MVI A,08H	A=08H
14	2518	90		SUB B	A=A-B(To get a zero count)
15	2519	32,11,25		STA 2511H	Load the contents of the accumulator in the address location 2511H,M[2511]=A(store the number of ones)
16	251C	76		HLT	Stop the program.



5.Write a program to sum two 16 bits binary numbers.

SL NO	ADDRESS	OPCODE IN HEX	LABEL	INSTRUCTIONS	COMMENTS
1	2500	21,00,25		LXI H, 2500H	Contents of memory location 2500H into HL register pair
2	2503	7E		MOV A,M	A=M[HL]
3	2504	21,02,25		LXI H,2502H	Contents of memory location 2502H into HL register pair
4	2507	46		MOV B,M	B=M[HL]
5	2508	80		ADD B	A=A+B
6	2509	32,10,25		STA 2510	Load the contents of the accumulator in the address location 2510H,M[2510]=A
7	250C	3E,00		MVI A,00H	A=00H
8	250E	8F		ADC A	Add the carry generated
9	250F	32,11,25		STA 2511H	Load the contents of the accumulator in the address location 2511H,M[2511]=A
10	2512	21,01,25		LXI H,2501	Contents of memory location 2501H into HL register pair

11	2515	56		MOV D,M	D=M[HL]
12	2516	82		ADD D	A=A+D
13	2517	21,03,25		LXI H,2503H	Contents of memory location 2503H into HL register pair
14	251A	56		MOV D,M	D=M[HL]
15	251B	82		ADD D	A=A+D
16	251C	32,11,25		STA 2511H	Load the contents of the accumulator in the address location 2511H,M[2511]=A
17	251F	3E,00		MVI A,00H	A=00H
18	2521	8F		ADC A	Add the carry to the accumulator
19	2522	32,12,25		STA 2512H	Load the contents of the accumulator in the address location 2512H,M[2512]=A
20	2525	76		HLT	Stop the program


8085 Simulator - C:\Users\USER\Downloads\Q4.asm
File Tools Settings Simulation Load Sample Program Help
8085 Assembly Language Editor
Assembler Disassembler
LXI H,2500H
MOV A,M
LXI H,2502
MOV B,M
ADD B
STA 2510
MVI A,00H
ADC A
STA 2511
LXI H,2501
Assemble
Registers :
Register Value 7 6 5 4 3 2 1 0
Accumulator 00 0 0 0 0 0 0 0 0
Register B 00 0 0 0 0 0 0 0 0
Register C 00 0 0 0 0 0 0 0 0
Register D 00 0 0 0 0 0 0 0 0
Register E 00 0 0 0 0 0 0 0 0
Register H 00 0 0 0 0 0 0 0 0
Register L 00 0 0 0 0 0 0 0 0
Memory(M) 00 0 0 0 0 0 0 0 0
Resister Value S Z * AC * P * CY
Flag Resister 00 0 0 0 0 0 0 0 0
Type Value
Stack Pointer(SP) 0000
Memory Pointer (HL) 0000
Program Status Word(PSW) 0000
Program Counter(PC) 0000
Clock Cycle Counter 0
Instruction Counter 0
SOD SID INTR TRAP R7.5 R6.5 R5.5
0 0 0 0 0 0 0
For SIM instruction SOD SDE * R7.5 MSE M7.5 M6.5 M5.5
0 0 0 1 0 0 0 0
For RIM instruction SID I7.5 I6.5 I5.5 IE M7.5 M6.5 M5.5
0 0 0 0 0 0 0 0
Simulate :
Start From → 0000
Run all At a Time
Step By Step
No. Converter Tool :
Hexadecimal Decimal 7 6 5 4 3 2 1 0
0 0 0 0 0 0 0 0 0
* Addre... Label Mnemonics Hexco... Bytes M-Cycl... T-Stat...
√ 2500 LXI H,2500 21 3 3 10
2501 00
2502 25
√ 2503 MOV A,M 7E 1 2 7
√ 2504 LXI H,2502 21 3 3 10
2505 02
2506 25
√ 2507 MOV B,M 46 1 2 7
√ 2508 ADD B 80 1 1 4
√ 2509 STA 2510 32 3 4 13
250A 10
250B 25
√ 250C MVI A,00 3E 2 2 7
250D 00
√ 250E ADC A 8F 1 1 4
√ 250F STA 2511 32 3 4 13
2510 11
2511 25
√ 2512 LXI H,2501 21 3 3 10
2513 01
2514 25
√ 2515 MOV D,M 56 1 2 7
√ 2516 ADD D 82 1 1 4
√ 2517 LXI H,2503 21 3 3 10
Created by : Jubin Mitra
Memory Range: 2500 ---- FFFF
Memory Editor
Memory Address Value
2500 21
2502 25
2503 7E
2504 21
2505 02
2506 25
2507 46
2508 80
2509 32
250A 10
250B 25
250C 3E
250E 8F
250F 32
2510 11
2511 25
2512 21
Show entire memory content
Show only loaded memory location
Store directly to specified memory location
I/O Port Editor
0 1 2 3 4 5 6 7 8 9 A B C D E F
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
30 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
40 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
50 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
60 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
70 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
90 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
C0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00