Experiment - 2

Aim :- WAP for addition of two 8-bit numbers.

a) Sum 8-bit

b) Sum 16-bit

Software Required :- GNUSIM 8085

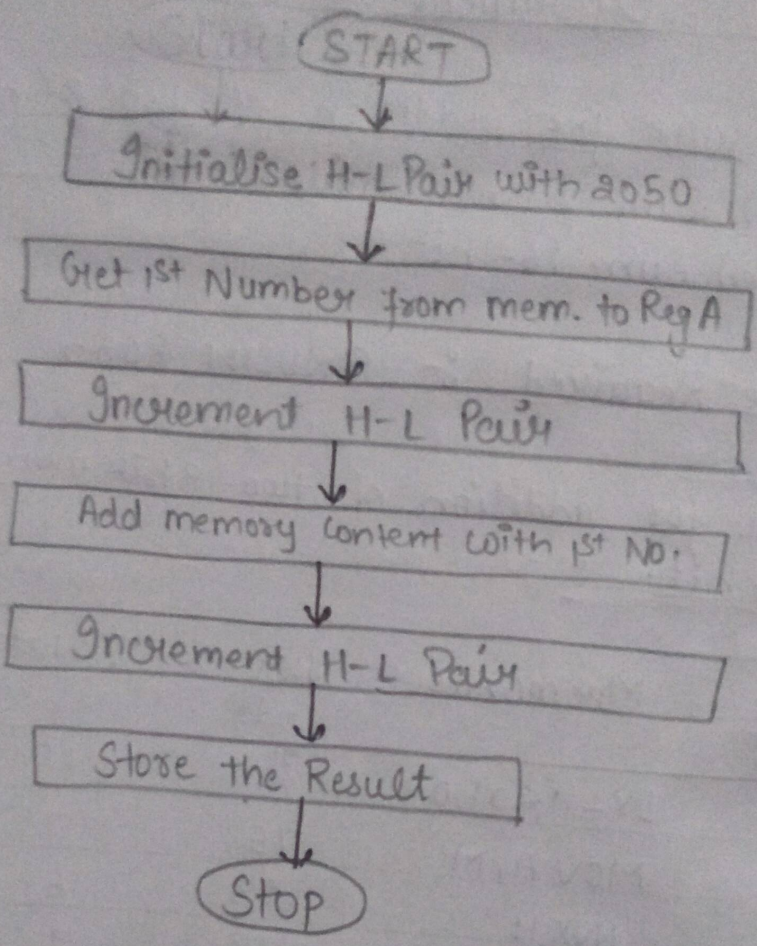
a) Program for addition of two-8 bit numbers whose sum is 8-bit.

Memory Location	Mnemonics	Hex Code	T-state	Comments.
2000 2001 2002	LXI H, 2050	21 50 20	10	Load H-L Pair
2003	MOV A, M	7E	7	
2004	INX H	23	6	Increment H-L Pair
2005	ADD M	86	7	
2006	INX H	23	6	
2007	MOV M, A	77	7	
2008	HLT	76	5 or more	Program execution STOP.

Result :-

Memory location	Before execution	After execution
2050	10	10
2051	10	10
2052	F0	20

Flow Chart


START
Initialise H-L Pair with 2050
Get 1st Number from mem. to Reg A
Increment H-L Pair
Add memory content with 1st NO.
Increment H-L Pair
Store the Result
Stop

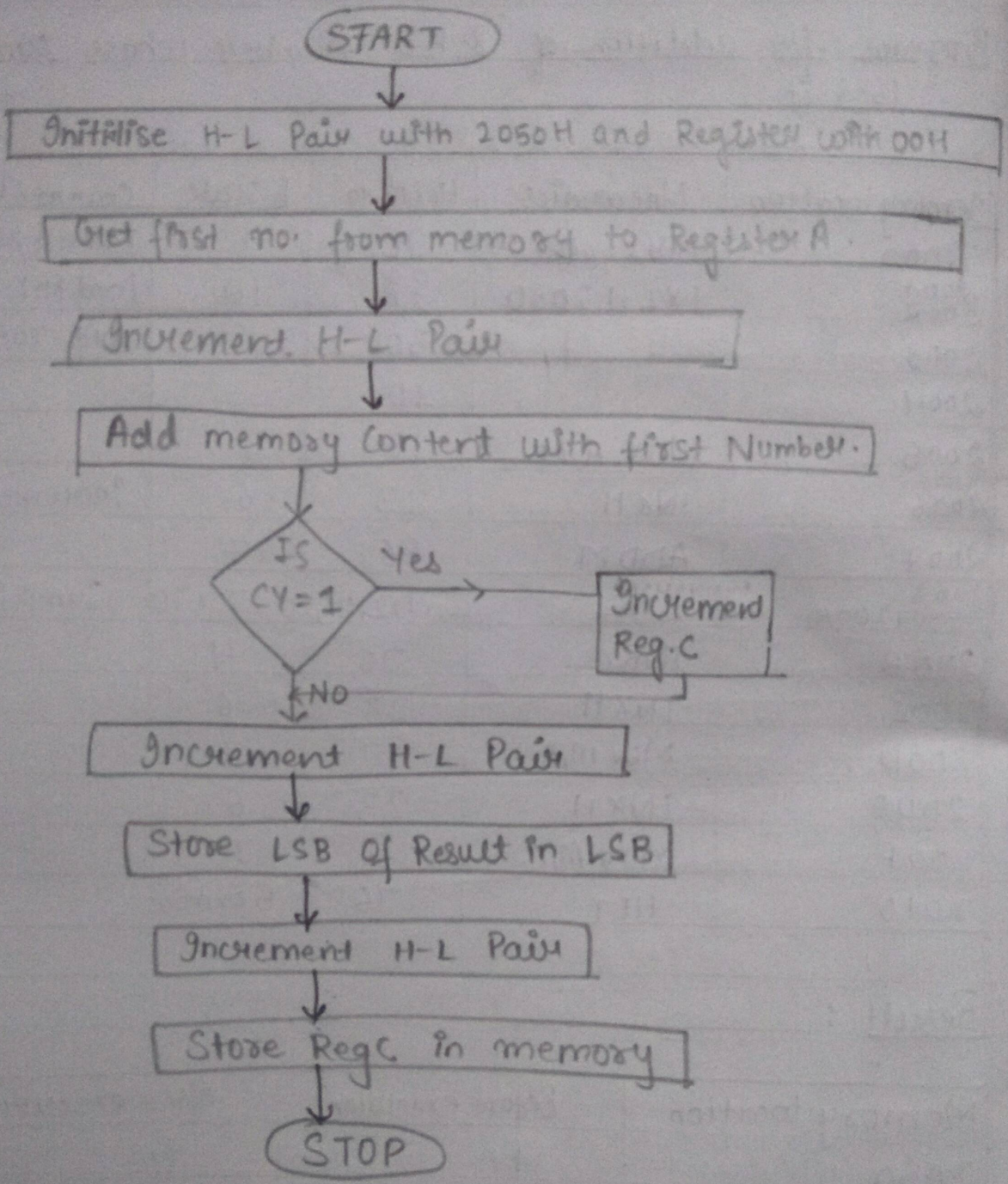
b) Program for addition of 8-bit number whose sum is 16-bit

Memory location	Mnemonics	Hex code	T-State	Comments
2000	MVI C,00	0E	7	Move 8-bit data
2001	LXI H,2050	00	10	Load H-L Pair
2002		21		
2003		50		with 2050
2004		20		
2005	MOV A,M	7E	7	
2006	INX H	23	6	Increment H-L
2007	ADD M	86	7	
2008 2009, 200A	JNC	D2,0C,20	7 or 10	Jump if No Carry
200B	INR C	0C	4	
200C	INX H	23	6	
200D	MOV M,A	77	7	
200E	INX H	23	6	
200F	MOV M,C	71	7	
2010	HLT	76	5 or more	

Result :

Memory location	Before execution	After execution.
2050	F1	F1
2051	12	12
2052	FF	03
2053	FF	01

FLOW CHART



Aim :-

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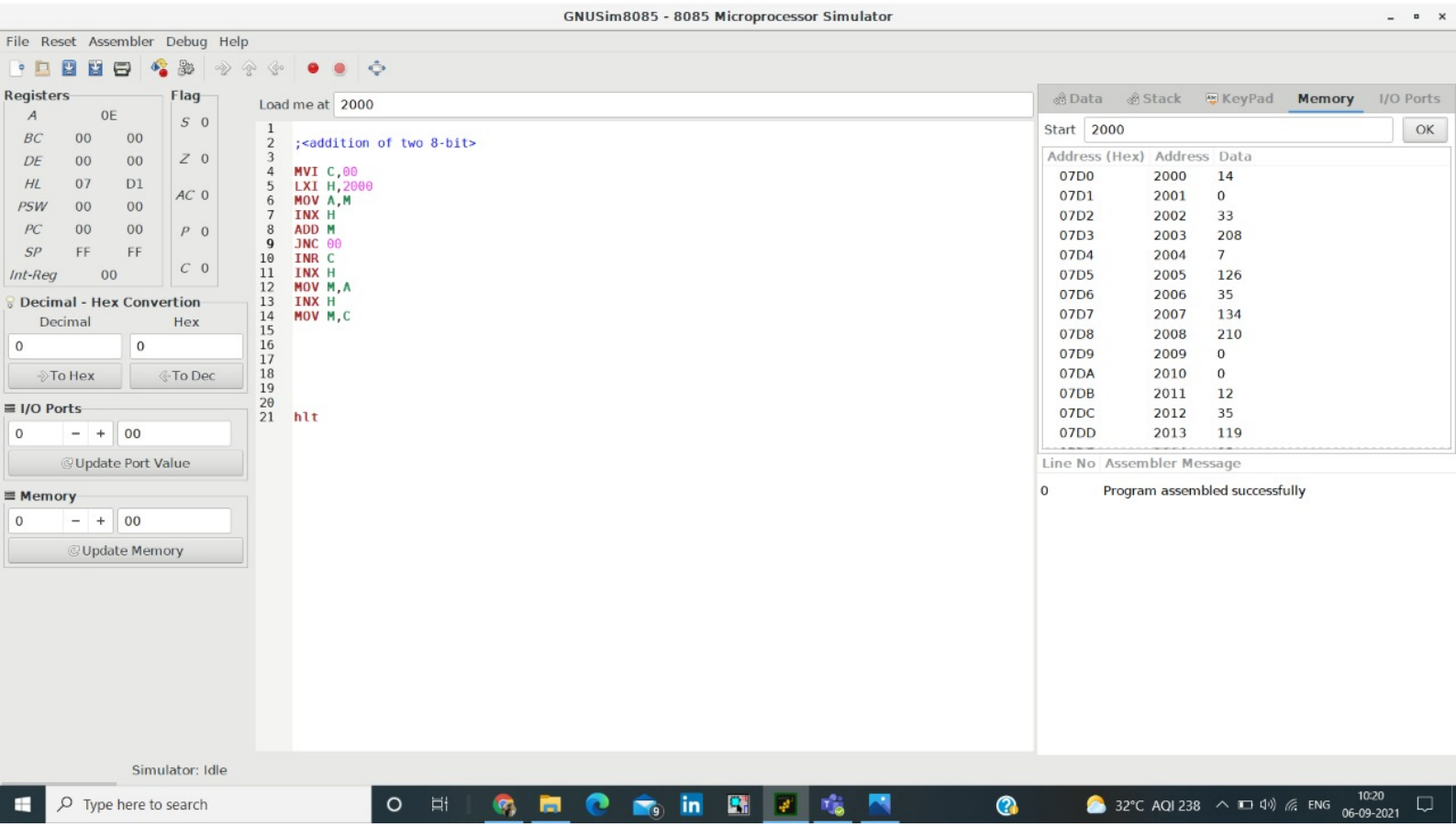
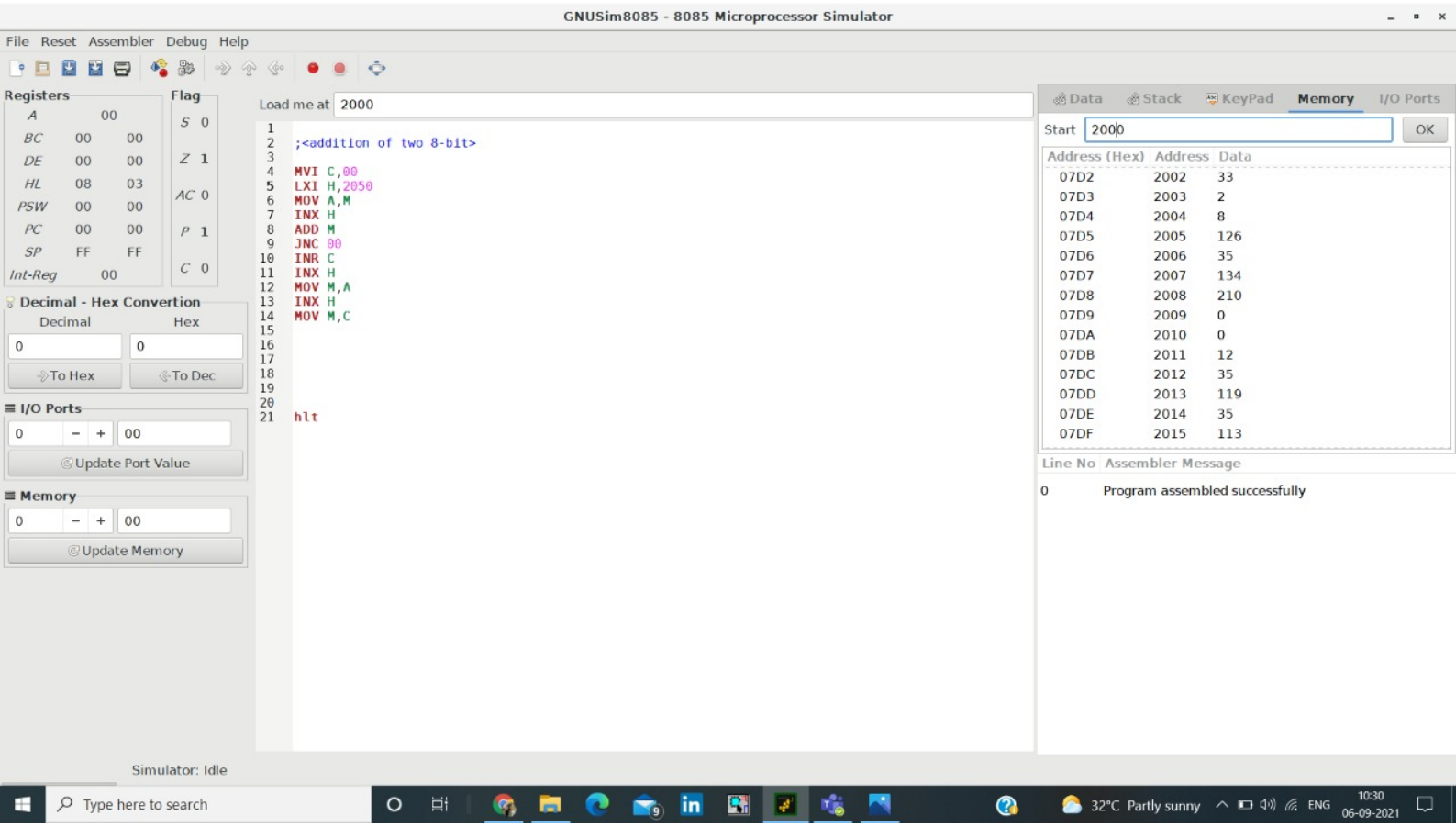
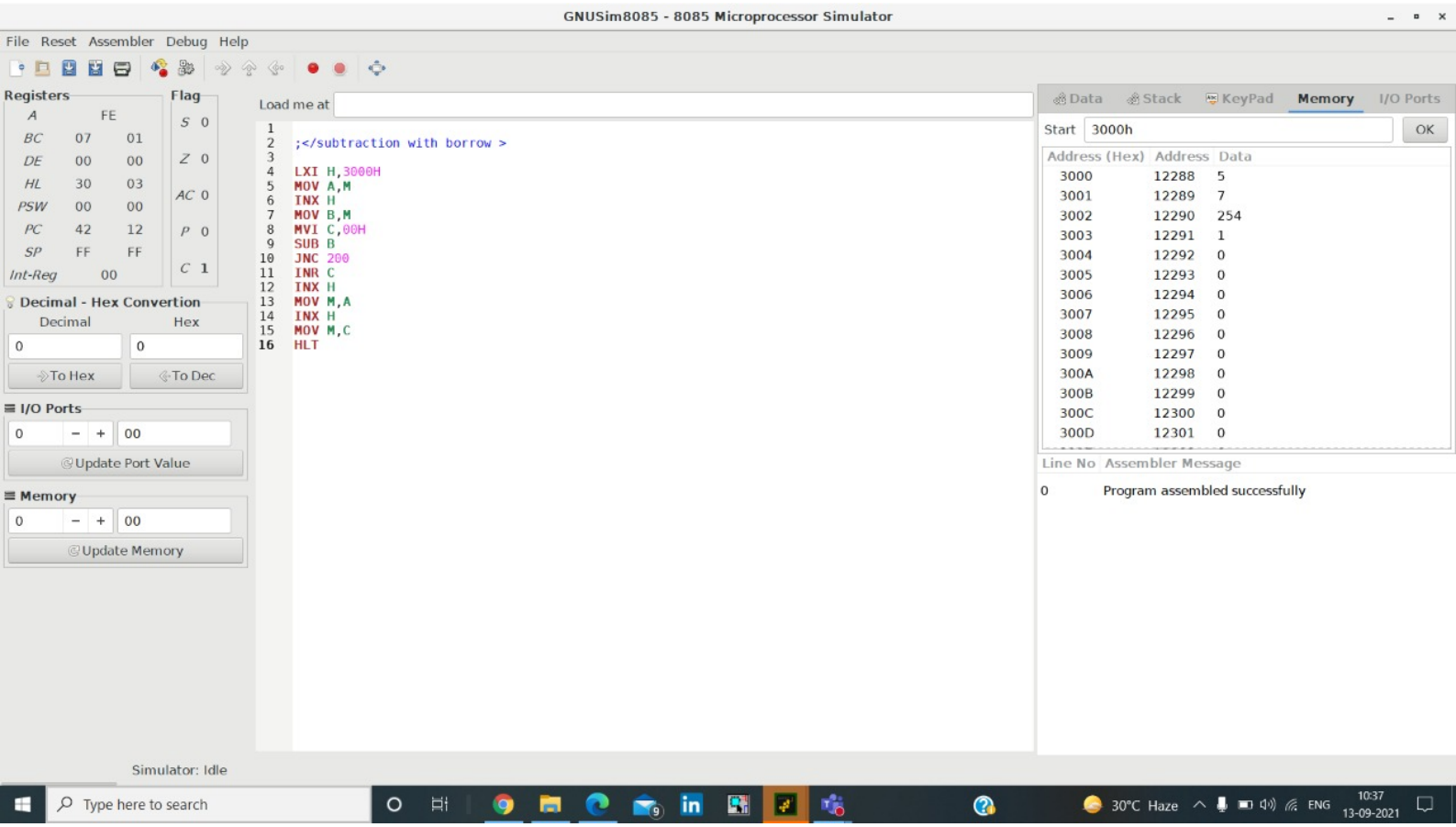

GNUSim8085 - 8085 Microprocessor Simulator
File Reset Assembler Debug Help
Registers
A 0E
BC 00 00
DE 00 00
HL 07 D1
PSW 00 00
PC 00 00
SP FF FF
Int-Reg 00
Flag
S 0
Z 0
AC 0
P 0
C 0
Decimal - Hex Convertion
Decimal
Hex
0
0
To Hex
To Dec
I/O Ports
0 - + 00
Update Port Value
Memory
0 - + 00
Update Memory
Load me at 2000
1 ;<addition of two 8-bit>
2
3 MVI C,00
4 LXI H,2000
5 MOV A,M
6 INX H
7 ADD M
8 JNC 00
9 INR C
10 INX H
11 MOV M,A
12 INX H
13 MOV M,C
14
15
16
17
18
19 hlt
Data Stack KeyPad Memory I/O Ports
Start 2000 OK
Address (Hex) Address Data
07D0 2000 14
07D1 2001 0
07D2 2002 33
07D3 2003 208
07D4 2004 7
07D5 2005 126
07D6 2006 35
07D7 2007 134
07D8 2008 210
07D9 2009 0
07DA 2010 0
07DB 2011 12
07DC 2012 35
07DD 2013 119
Line No Assembler Message
0 Program assembled successfully
Simulator: Idle
Type here to search
32°C AQI 238
ENG
10:20
06-09-2021


GNUSim8085 - 8085 Microprocessor Simulator
File Reset Assembler Debug Help
Registers
A 00
BC 00 00
DE 00 00
HL 08 03
PSW 00 00
PC 00 00
SP FF FF
Int-Reg 00
Flag
S 0
Z 1
AC 0
P 1
C 0
Decimal - Hex Convertion
Decimal
Hex
0
0
To Hex
To Dec
I/O Ports
0 − + 00
Update Port Value
Memory
0 − + 00
Update Memory
Load me at 2000
1
2 ;<addition of two 8-bit>
3
4 MVI C,00
5 LXI H,2050
6 MOV A,M
7 INX H
8 ADD M
9 JNC 00
10 INR C
11 INX H
12 MOV M,A
13 INX H
14 MOV M,C
15
16
17
18
19
20
21 hlt
Data Stack KeyPad Memory I/O Ports
Start 2000 OK
Address (Hex) Address Data
07D2 2002 33
07D3 2003 2
07D4 2004 8
07D5 2005 126
07D6 2006 35
07D7 2007 134
07D8 2008 210
07D9 2009 0
07DA 2010 0
07DB 2011 12
07DC 2012 35
07DD 2013 119
07DE 2014 35
07DF 2015 113
Line No Assembler Message
0 Program assembled successfully
Simulator: Idle
Type here to search
32°C Partly sunny
ENG
10:30
06-09-2021


GNUSim8085 - 8085 Microprocessor Simulator
File Reset Assembler Debug Help
Registers
A FE
BC 07 01
DE 00 00
HL 30 03
PSW 00 00
PC 42 12
SP FF FF
Int-Reg 00
Flag
S 0
Z 0
AC 0
P 0
C 1
Decimal - Hex Convertion
Decimal Hex
0 0
To Hex To Dec
I/O Ports
0 − + 00
Update Port Value
Memory
0 − + 00
Update Memory
Load me at
1
2 ;</subtraction with borrow >
3
4 LXI H,3000H
5 MOV A,M
6 INX H
7 MOV B,M
8 MVI C,00H
9 SUB B
10 JNC 200
11 INR C
12 INX H
13 MOV M,A
14 INX H
15 MOV M,C
16 HLT
Data Stack KeyPad Memory I/O Ports
Start 3000h OK
Address (Hex) Address Data
3000 12288 5
3001 12289 7
3002 12290 254
3003 12291 1
3004 12292 0
3005 12293 0
3006 12294 0
3007 12295 0
3008 12296 0
3009 12297 0
300A 12298 0
300B 12299 0
300C 12300 0
300D 12301 0
Line No Assembler Message
0 Program assembled successfully
Simulator: Idle
Type here to search
30°C Haze
ENG
10:37
13-09-2021