

Aim: To perform addition of two 8 bit numbers using 8085.

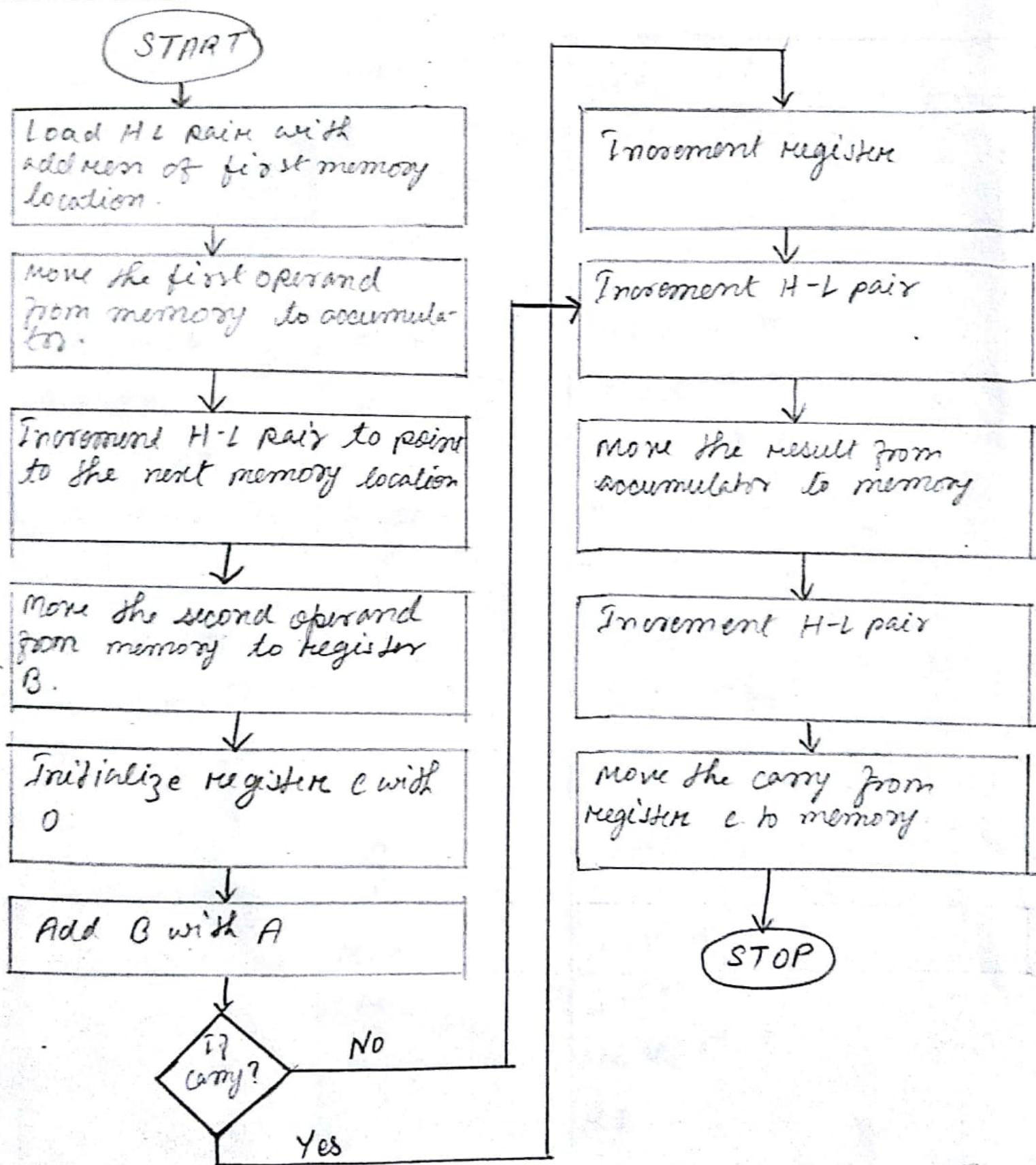
Program:

Address	Program	Explanation
C200	LXI H, C000	This instruction load C000 in HL pair stored value 05H in C000 increment the location and stored 06 in C001.
C203	MVI M, 05H	
C204	INX H	
C205	MVI M, 06H	
C206	LXI H, C000	Initially H-L pair is loaded with the address of first memory location
C209	MOV A, M	first operand moved to accumulator from memory location C000.
C20A	INX H	H-L pair is incremented point to next memory location.
C20C	MVI C, 00H	Register C is initialized to 00H. It stores the carry.



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C20E	ADD B	Registers B value is added with accumulator value and result is stored in the accumulator.
C20F	JNC C213	Jump to the location C213 when there is no carry.
C212	JNR C	If carry generated C value is incremented.
C213	INX H	Increment the H-L pair value to point to next memory location.
C214	MOV M, A	Moved the accumulator value in memory location 0002.
C215	INX H	Increment the value of H-L pair to point to 0003.
C216	MOV M, C	Move the C register value to 0003.
C217	RST 1	

Flow Chart :-

Mnemonics :-

Address	Opcode	Operand	Command
C206	LXI	H, C000	LXI H, C000
C207			
C208			
C209	MOV	A, M	MOV A, M
C20A	INX	H	INX H
C20B	MOV	B, M	MOV B, M
C20C	MVI	C, 00H	MVI C, 00H
C20D			
C20E	ADD	B	ADD B
C20F	JNC	C213	JNC C213
C210			
C211			
C212	INR	C	INR C
C213	INX	H	INX H
C214	MOV	M, A	MOV M, A
C215	INX	H	INX H
C216	MOV	M, C	MOV M, C
C217	RST 1		RST 1



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Input Output :

Input address	Value	Output add	Value
C 0 0 0	0 5	C 0 0 2	0 8
C 0 0 1	0 6	C 0 0 3	0 1

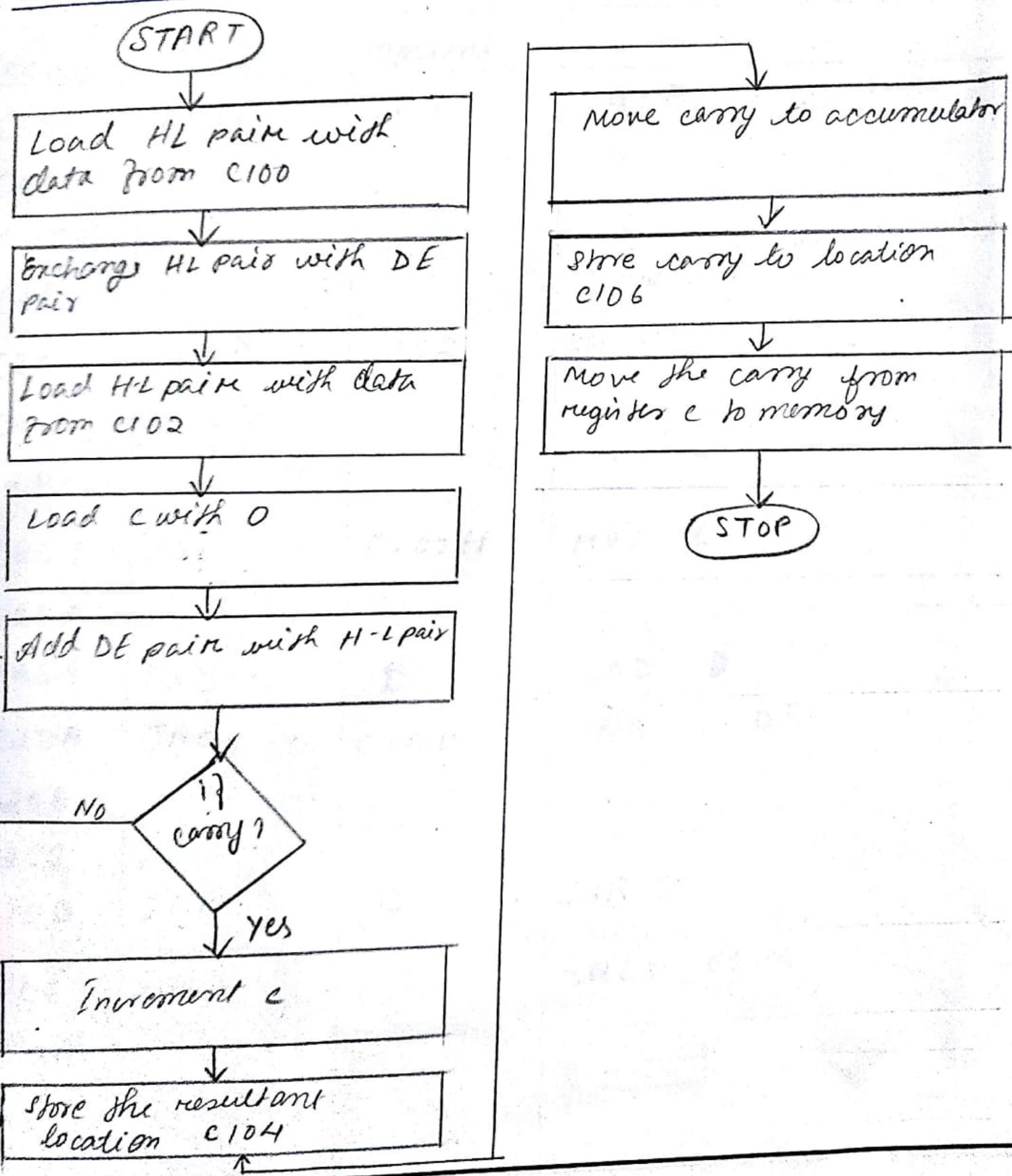
Result : Thus the program to add two 8 bit numbers is executed.

Aim: To perform addition of two 16 bit numbers using 8085.

Program:

Address	Program	Explanation
C200	LHLD C100	Load H-L pair with address C100
C203	XCHG	Exchange the value of H-L pair with register pair DE.
C204	LHLD C102	Data stored in C102 is loaded in the H-L pair.
C207	MVI C, 00H	Initialize C register with value 0.
C209	ADD D	Add the value of DE register pair with H-L pair.
C20A	JNC C20E	Jump to the location specified C20E if there is no carry.
C20D	INR C	Increment the C register pair value.

C20E	SHLD C104	Store the result from HL pair to C104
C211	MOV A,C	Move the register C value to the accumulator.
C212	STA C106	Move the register C value to the accumulator.
C215	RST 1.	

Flowchart :-

Mnemonics :

Address	Opcode	Operand	
C200	LHLD	C100	LHLD C100
C201			
C202			
C203	XCHG		XCHG
C204	LHLD	C102	LHLD C102
C205			
C206			
C207	MVI	C,00H	MVI C,00H
C208			
C209	DAD	D	DAD D
C20A	JNC	C20E	JNC C20E
C20B			
C20C			
C20D	INR	C	INR C
C20E	SHLD	C104	SHLD C104
C20F			

C210			
C211	MOV	A, C	MOV A, C
C212	STA	C106	STA C106
C213			
C214			
C215	RST 1		RST 1

Input Output :

Input address	Value	Output address	Value
C100	1611	C104	B0
C101	5AH	C105	76
C102	9AH	C106	01
C103	7CH		

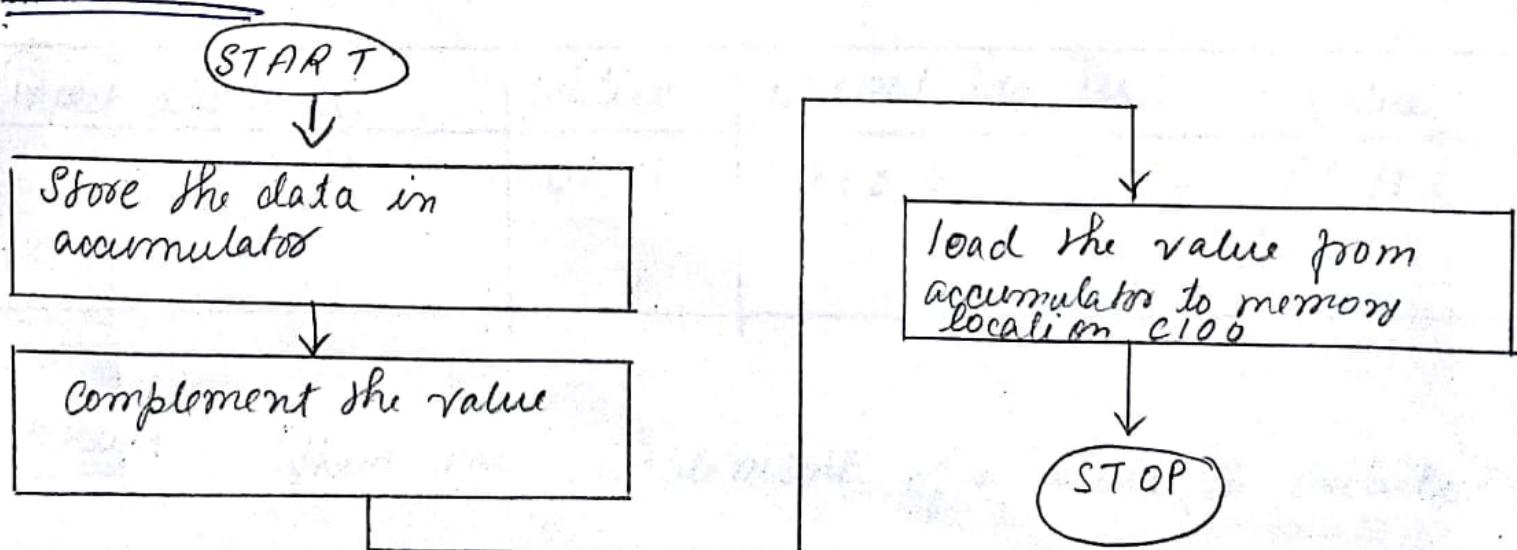
Result : Thus the program to add two 16 bit number is executed.

Aim :- To find the one's complement of a 8 bit number

Program :

Address	Program	Explanation
C200	MVI A, 04H	Store 04 in the accumulator
C202	CMA	complement the value of accumulator.
C203	STA C100	store the accumulator value in the location C100 .
C206	RST 1	

Flow chart :



Mnemonics :-

Address	Opcode	Operand	Command
C200	MVI	A, 04	MVI A, 04
C201			
C202	CMA		CMA
C203	STA	C100	STA C100
C204			
C205			
C206	RST 1		RST 1

Input Output :-

Input address	Value	Output address	Value
A	04H	C100	FBH

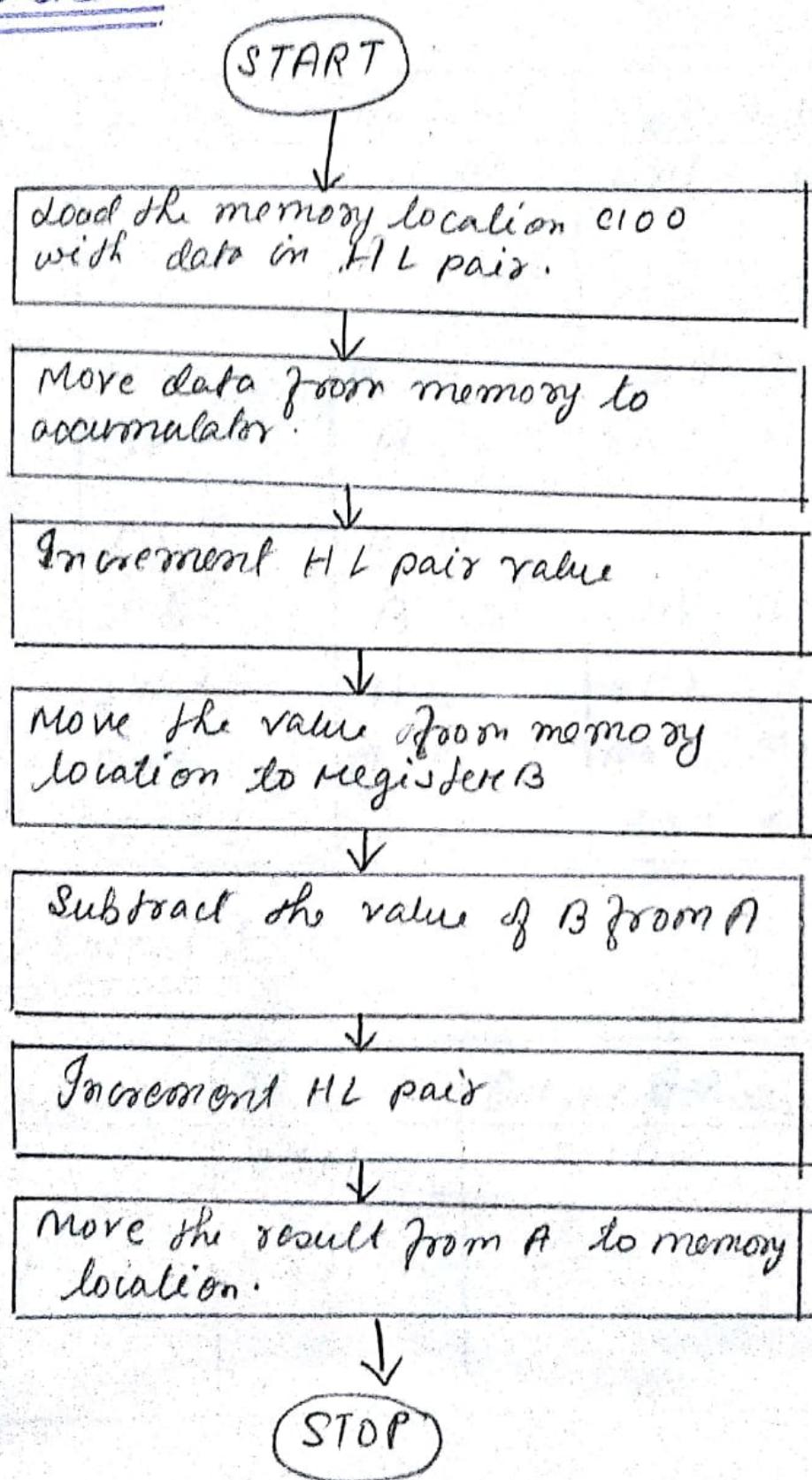
Result :- Thus the complement of a 8 bit is executed.

Aim: To find the subtraction of two 8-bit numbers using 8085

Programme:

Address	Program	Explanation
C200	LXI H, C100	Load the memory location C100 in HL pair.
C203	MOV A, M	Move the value of memory location C100 to accumulator.
C204	INX H	Increment the value of HL pair to point to the next memory location.
C205	MOV B, A	Move the value of the memory location C101 to register B.
C206	SUB B	Subtract the value of register B from accumulator.
C207	INX H	Increment the value of HL pair to point to next memory location.
C208	MOV M, A	Move the content of accumulator to memory location C102.
C209	RST 1	

Flow Chart :-





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Mnemonics:

Address	Opcode	Operands	Command
C200	LXI	H, C100	LXI H, C100
C201			
C202			
C203	MOV	A, M	MOV A, M
C204	INX	H	INX H
C205	MOV	B, M	MOV B, M
C206	SUB	B	SUB B
C207	INX	H	INX H
C208	MOV	M, A	MOV M, A
C209	RST 1		RST 1

Input Output:

Input Address	Value	Output Address	Value
C100	07H	C102	02H
C101	05H		

Result : Thus the subtraction of two 8 bit number is executed.

$$\begin{array}{r} 08H \longrightarrow C100 \\ - 05H \longrightarrow C101 \\ \hline 03H \longrightarrow C102 \end{array}$$



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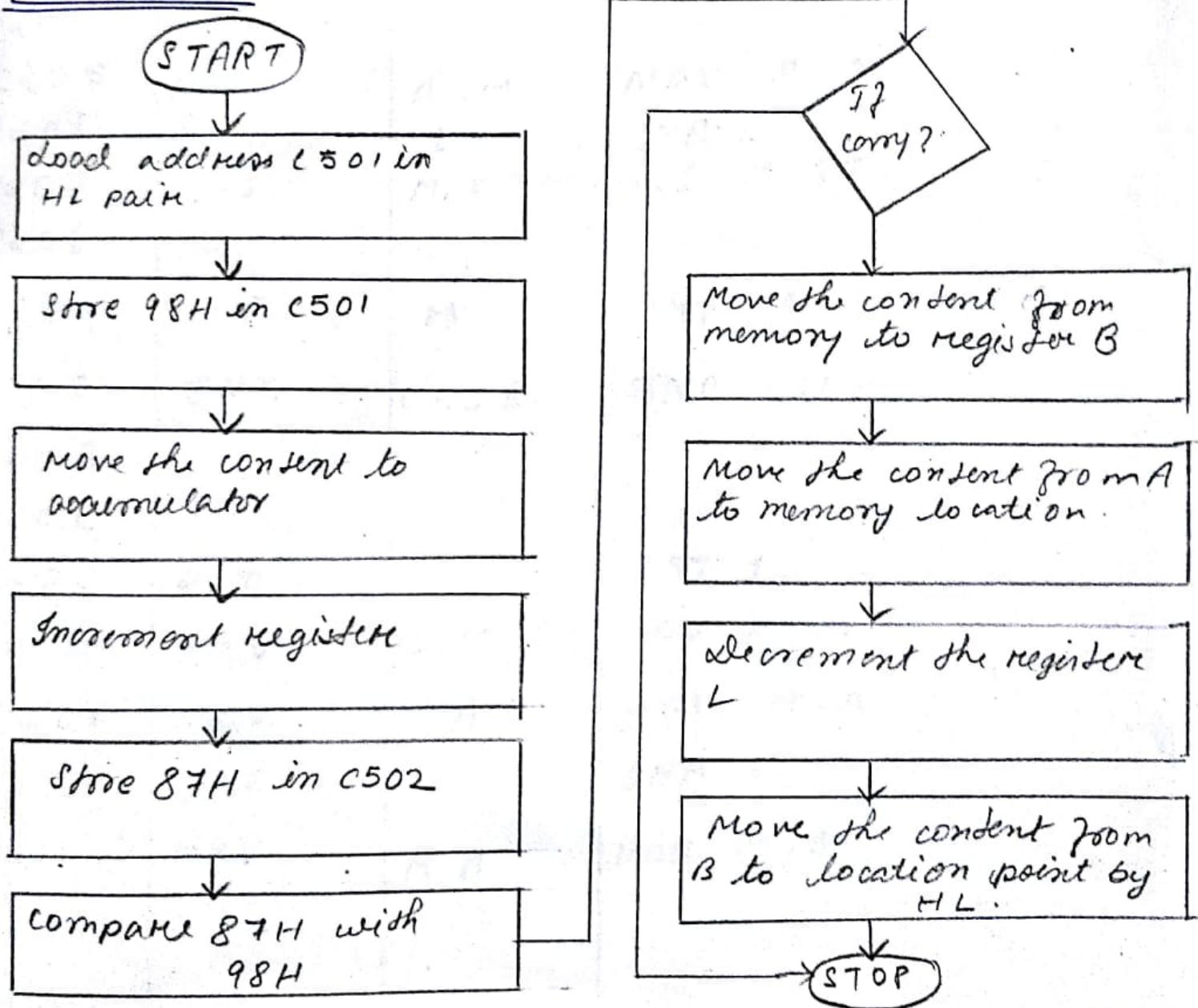
Aim: Find the largest of two numbers. 98H is stored in C501 and 87H is stored C502. store the largest in the location C502.

Program:

Address	Program	Explanation
C200	LXI H, C501	Load the address of the memory location in the HL pair.
C203	MVI M, 98H	Store 98H in the location C100.
C205	MOV A, M	Move the content from memory to accumulator.
C206	INR L	Increase the register L.
C207	MVI M, 87H	Store 87H in the memory location C101.
C209	CMP M	Compare memory location value with accumulator.
C20B	JNC	Jump when no carry.
C20D	RST 1	
C20E	MOV B, M	Move the content of memory location to the B register

C20F	MOV M, A	Move the content of the accumulator to the memory.
C210	DCR L	decrement the register L.
C211	MOV M, B	Move the content of B to the memory location.

Flow Chart:



Mnemonics :-

Address	Opcode	Operand	Command
C200	LXI	H, C501	LXI H, C501
C201			
C202			
C203	MVI	M, 98H	MVI M, 98H
C204			
C205	MOV	A, M	MOV A, M
C206	INR	L	INR L
C207	MVI	M, 87	MVI M, 87
C208			
C209	CMP	M	CMP M
C20A	JNC	C20E	JNC C20E
C20B			
C20C			
C20D	RST-1		RST 1
C20E	MOV	B, M	MOV B, M
C20F	MOV	M, A	MOV M, A
C210	INR	L	INR L
C211	MOV	M, B	MOV M, B

Input Output:

Input address	Value	Output address	Value
C501	98H	C501	87H
C502	87H	C502	98H

Result: Thus the largest between two number is stored in a proper location.



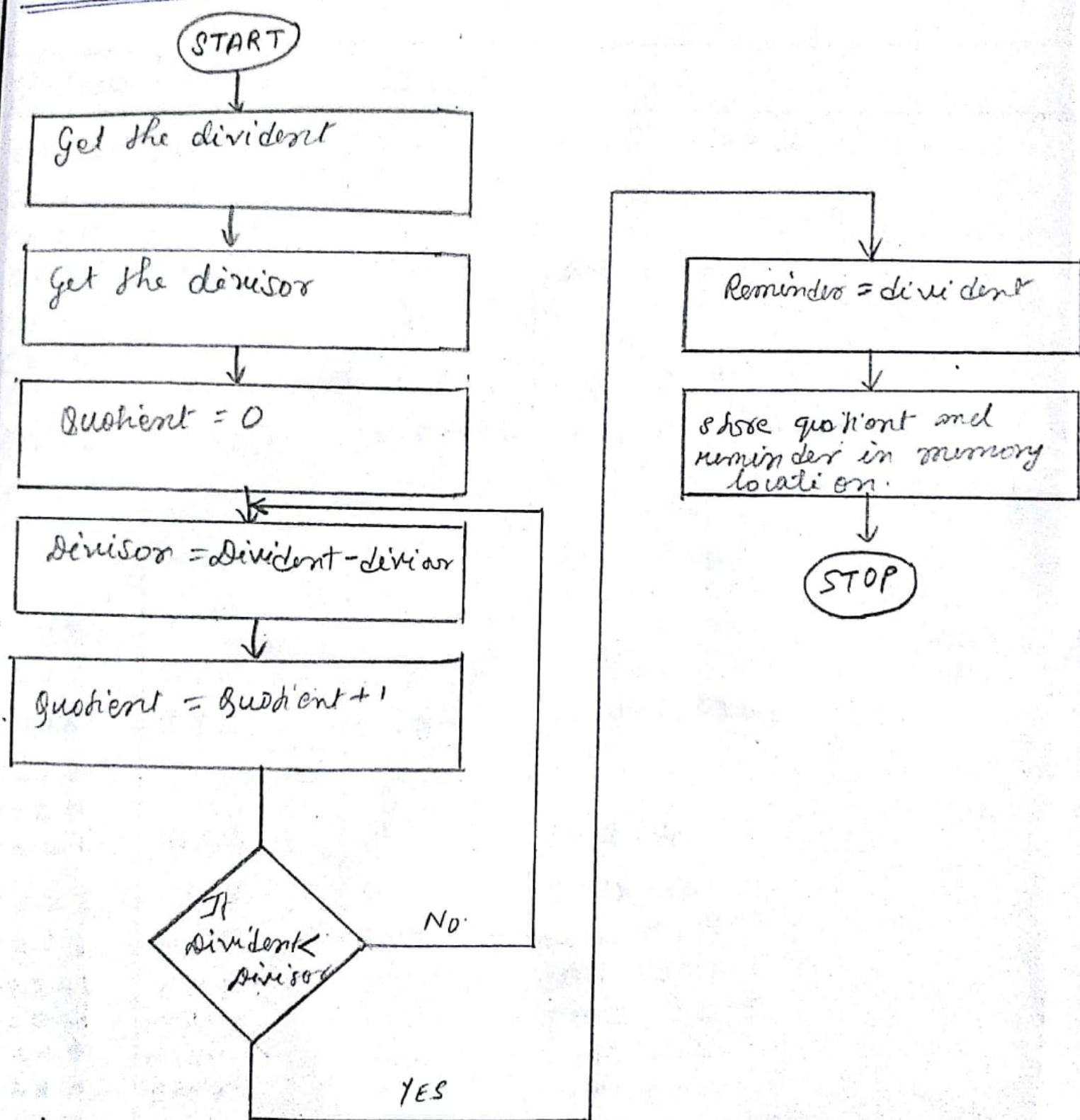
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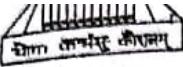
Aim: division of 16 bit number by 8 bit number using 8085.

Program:

Address	Program	Explanation.
C20B	LHLD C000	load memory location in HL pair
C20E	LDA C002	Load content of C002 in accumulator.
C211	MVR C,A	Move the content of accumulator to the register C.
C212	LXI D,0001H	load 0000 in DE register pair
C215	MVR A,L	Move the content of L to the accumulator.
C216	SUB C	subtract the content of C
C217	MVR L,A	move content of A to the register L.
C218	JNC C222	Jump to the location C222 when no carry.
C221	DCR H	decrement the H register.

C222	JNX D	Increment the DE register pair.
C223	MOV A, H	Move the A register value to A.
C224	CPI 00H	Compare accumulator value, it is 0 or not.
C226	JNZ C215	Jump to C215 when not zero.
C229	MOV A, L	Move the content of L to register A.
C22A	CMP C	Compare C content with accumulator content.
C22B	JNC C215	Jump to C215 when no carry.
C22E	SHLD C004	Store remainder in the location C004.
C231	XCHG	Exchange HL pair with DE pair.
C232	SHLD C008	Store the quotient in the location C008.
C235	RST 1.	

FLOW CHART:



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Mnemonics :

Address	Opcode	Operands	
C20B	LHLD	C000	LHLD C000
C20C			
C20D			
C20E	LDA	C002	LDA C002
C20F			
C210			
C211	MOV	C, A	MOV C, A
C212	LXI	D, 0000H	LXI D, 0000H
C213			
C214			
C215	MOV	A, L	MOV A, L
C216	SUB	C	SUB C
C217	MOV	L, A	MOV L, A
C218	JNC	C222	JNC C222
C219			
C220			
C221	DCR	H	DCR H
C222	INX	D	INX D
C223	MOV	A, M	MOV A, M
C224	CPI	00H	CPI 00H
C225	JNZ	C215	JNZ C215
C226	MOV	A, L	MOV A, L
C227	CMP	C	CMP C
C228	JNC	C226	JNC C226
C229			
C22A			
C22B			
C22C			
C22D			
C22E	SHLD	C004	SHLD C004

C22F			
C230			
C231	XCHG		XCHG
C232	SHLD	C008	SHLD C008
C233			
C234			
C235	RST1		RST1

Input Output :

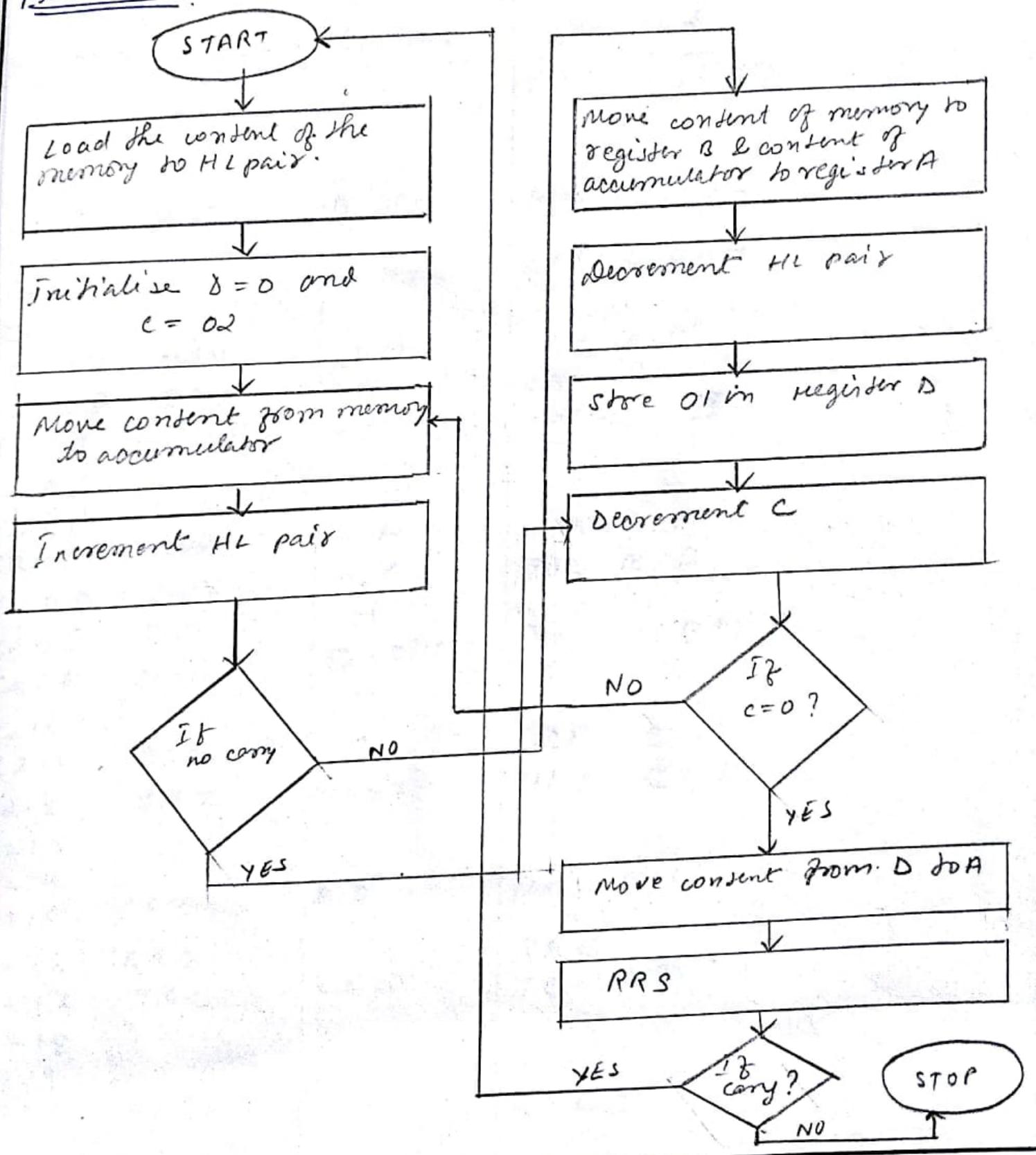
INPUT ADDRESS	VALUE	OUTPUT Address	Value
C000	60H	C004	E8H
C001	A0H	C005	08H
C002	12H	C006	10H
		C007	00H

Result : Thus the division of 16-bit number by 8-bit number is executed.

Aim: To arrange the three numbers in descending order.

Program:

Address	Program	Explanation
C200	LXI H , C100	Load memory locations in HL pair
C203	MVI D, 00H	Initialize D as 0
C205	MVI C, 02H	Initialize C register as 2
C207	MOV A, M	move the content of C100 to accumulator.
C208	INX H	Increment HL pair.
C209	JNC C211	Jump to C211 when no carry.
C20C	MOV B, M	Move content from memory to B.
C20D	MOV M, A	Move content from accumulator to memory location.
C20E	DCX H	Decrement HL pair.
C20F	MVI D, 01H	Move 01 to register D.
C211	DCR C	Decrement registers
C212	JNZ C207	Jump to C207 when not zero.
C216	RRC	Rotate accumulator value right through carry.
C217	JC C200	Jump to C200 when carry.
C220	RST 1	

Flow chart:

Mnemonics:

Address	Opcode	Operand	Command
C200	LXI	H, C100	LXI H, C100
C201			
C202			
C203	MVI	D, 00H	MVI D, 00H
C204			
C205	MVI	C, 02H	MVI C, 02H
C206			
C207	MOV	A, M	MOV A, M
C208	INX	H	INX H
C209	JNC	C211	JNC C211
C20A			
C20B			
C20C	MOV	B, M	MOV B, M
C20D	MOV	M, A	MOV M, A
C20E	DCX	H	DCX H
C20F	MVI	D, 01H	MVI D, 01H
C210			
C211	DCR	C	DCR C
C212	JNZ	C207	JNZ C207
C213			
C214			
C215	MOV	A, D	MOV A, D
C216	RRC		RRC
C217	JC	C200	JC C200
C218			
C219			
C21A	RST 1		RST 1

Input Output :-

Address (Input)	Value	Output address	Value
C200	05H	C100	09H
C101	09H	C101	07H
C102	07H	C102	05H

Result : Thus three numbers are arranged in descending order.



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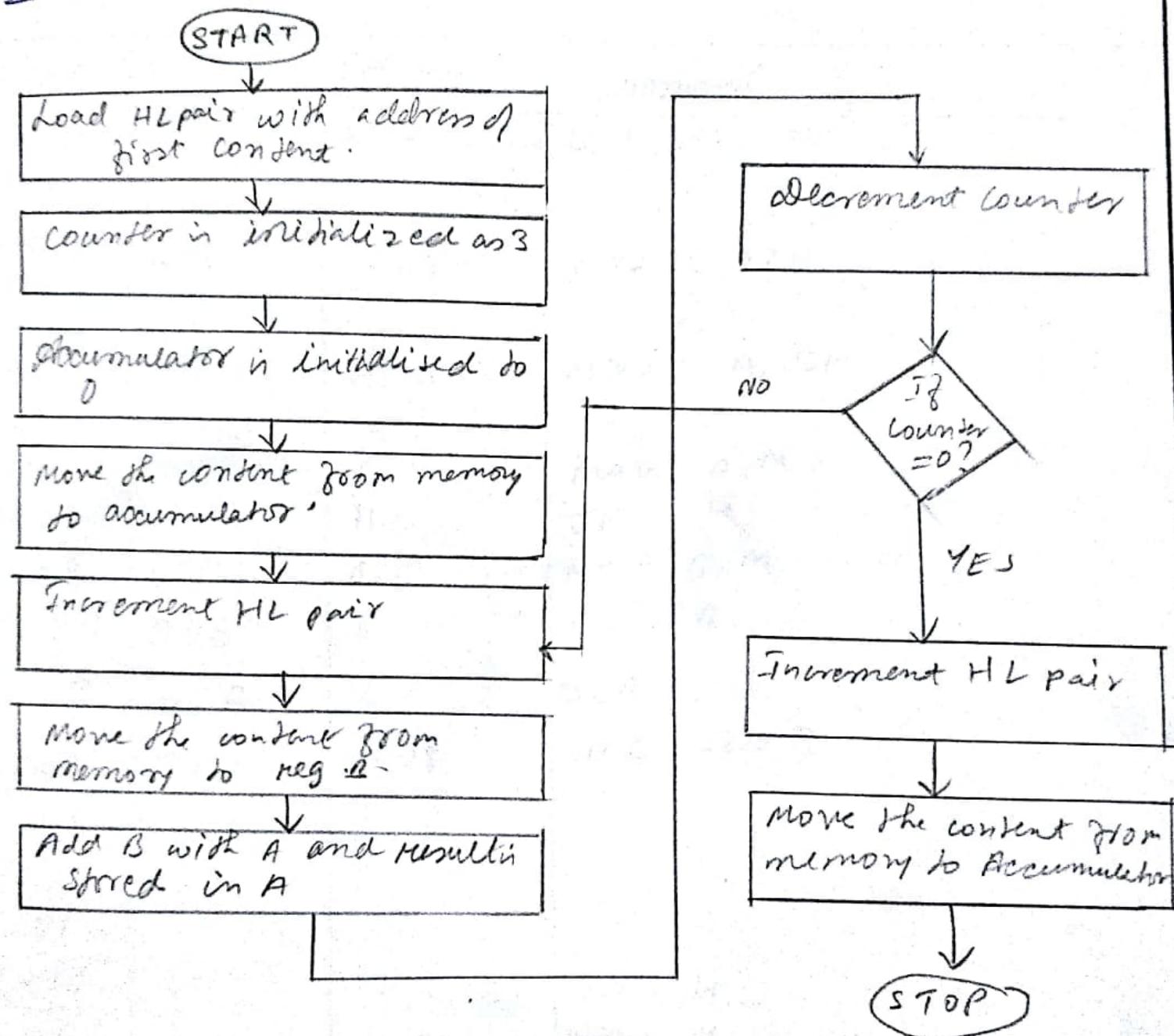
Aim: To find the sum of series of 8 bit numbers.

Program:

Address	Program	Explanation.
C200	LXI H, C100	load the address C100 in HL pair
C203	MVI C, 03H	03 is stored in C to count the number
C205	MVI A, 00H	A register is initialized as 0
C207	MOV A, M	Move the content of memory location C100 to the accumulator.
C208	INX A	Increment HL pair to point to next memory location.
C209	MOV B, M	Move the content from memory location to B register.
C20A	ADD B	Add value of B with accumulator
C20B	DCRC	Decrement C
C20C	JNZ C208	Jumps when C is not zero to the location . C208.
C20F	INX H	Increment HL pair to point to next memory location.
C210	MOV M, A	Move the content A to the memory location .
C211	RST 1	



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Flow Chart:

Mnemonics:

Address	Op code	Operand.	Command
C200	LXI	H, C100	LXI H, C100
C201			
C202			
C203	MVI	C, 03H	MVI C, 03H
C204			
C205	MVI	A, 00H	MVI A, 00H
C206			
C207	MOV	A, M	MOV A, M
C208	JNX	H	JNX H
C209	MOV	B, M	MOV B, M
C20A	ADD	B	ADD B
C20B	DCR	C	DCR C
C20C	JNC	C208	JNC C208
C20D			
C20E			
C20F			
C210	INX	H	INX H
C211	MOV	M, A	MOV M, A
C212	RST 1	Reset	RST 1

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Input Output :

Input address	Value	Output address	Value
C100	01H	C104	0AH
C101	02H		
C102	03H		
C103	04H		

Result :

Thus the addition of 4 numbers is executed.



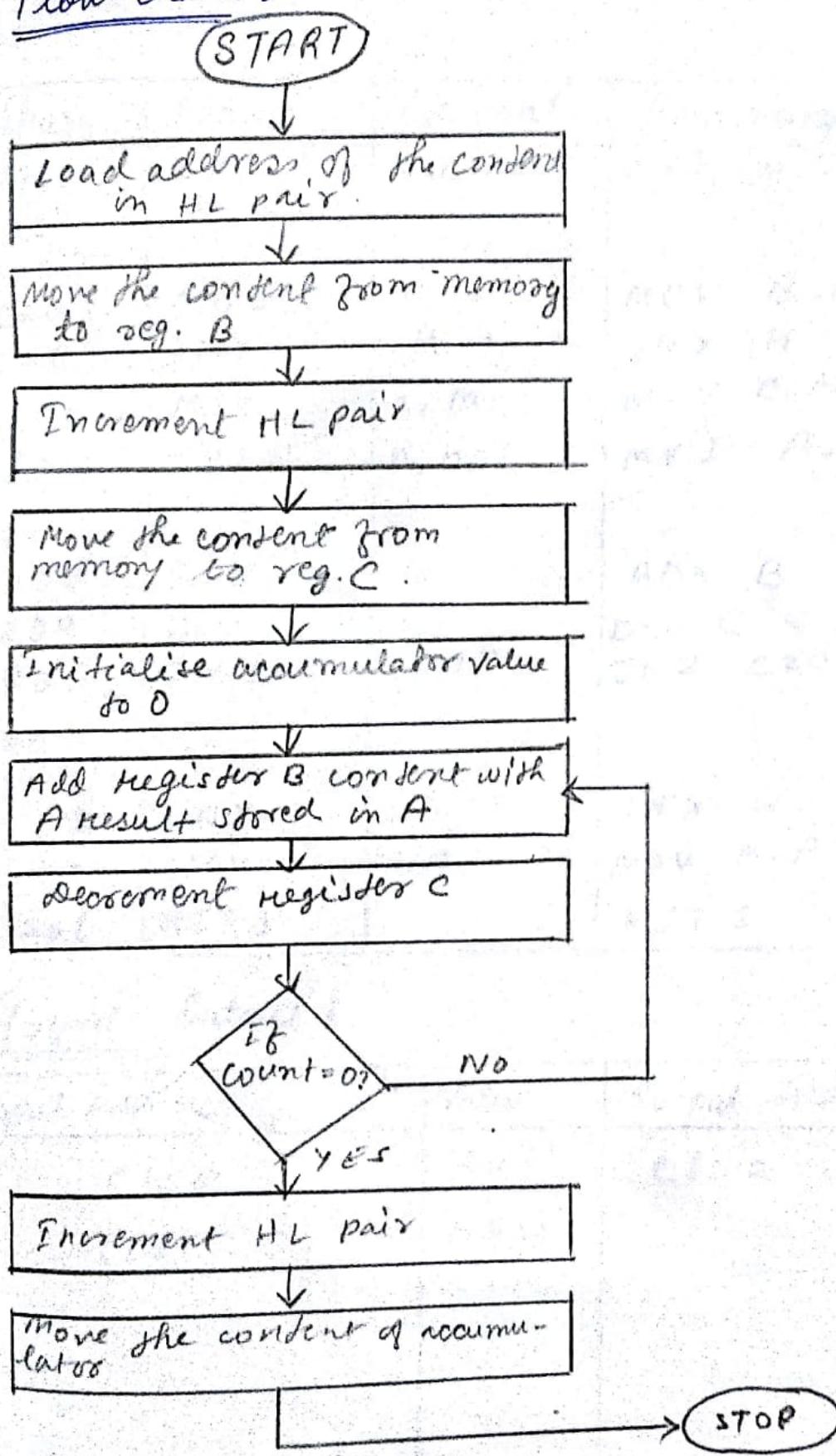
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Ques: To perform the multiplication of two 8-bit number using 8085

Program:

Address	Program	Address
C200	LXI H, C100H	Load the address of memory location in HL pair
C203	Mov B, M	Move the content from memory location
C204	INX H	Increment the HL pair to point to next memory location.
C205	MOV C, M	Move the content of memory location to Register C.
C206	MVI A, 00H	Accumulator value is initialised as 0
C208	ADD B	Add the content of HL register B with the content of accumulator
C209	DCR C	Decrement the value of C.
C20A	JNZ C208	Jump to C208 when C not zero.
C20D	INX H	Increment HL pair
C20E	Mov M, A	Move the result from accumulator to memory location.
C20F	RST 1.	

Flow Chart:



Mnemonics:

Address	Opcode	Operand	Command
C200	LXI	H, C100	LXI H, C100
C201			
C202			
C203	MOV	B, M	MOV B, M
C204	INX	H	INX H
C205	MOV	C, M	MOV C, M
C206	MVI	A, 00H	MVI A, 00H
C207			
C208	ADD	B	ADD B
C209	DCR	C	DCR C
C20A	JNZ	C208	JNZ C208
C20B			
C20C			
C20D	INX	H	INX H
C20E	MOV	M, A	MOV M, A
C20F	RST 1		RST 1

Input Output:

Input Address	Value	Output Address	Value
C100	0d H	C102	0AH
C101	05H		

Result: Thus the multiplication of two 8 bit numbers is executed. Multiplication is done by repeated addition.