

EXPERIMENT NO. 7

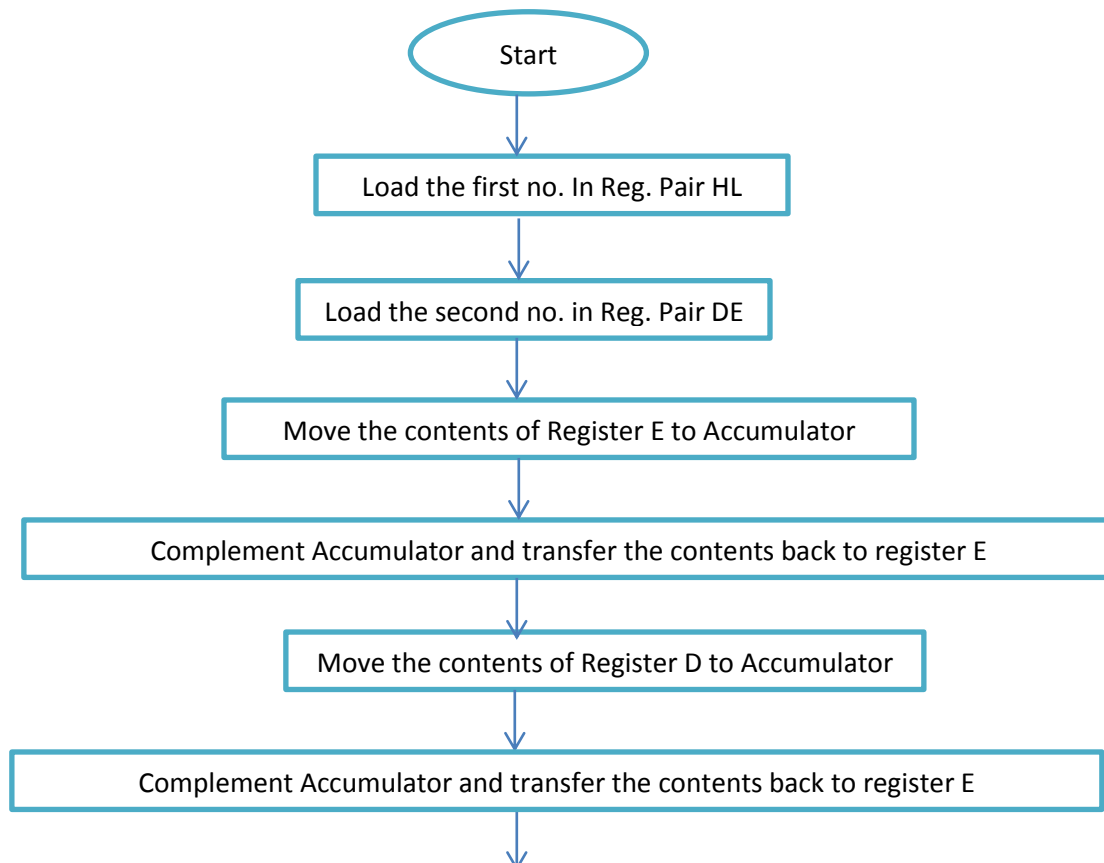
AIM: To subtract two 16-bit numbers.

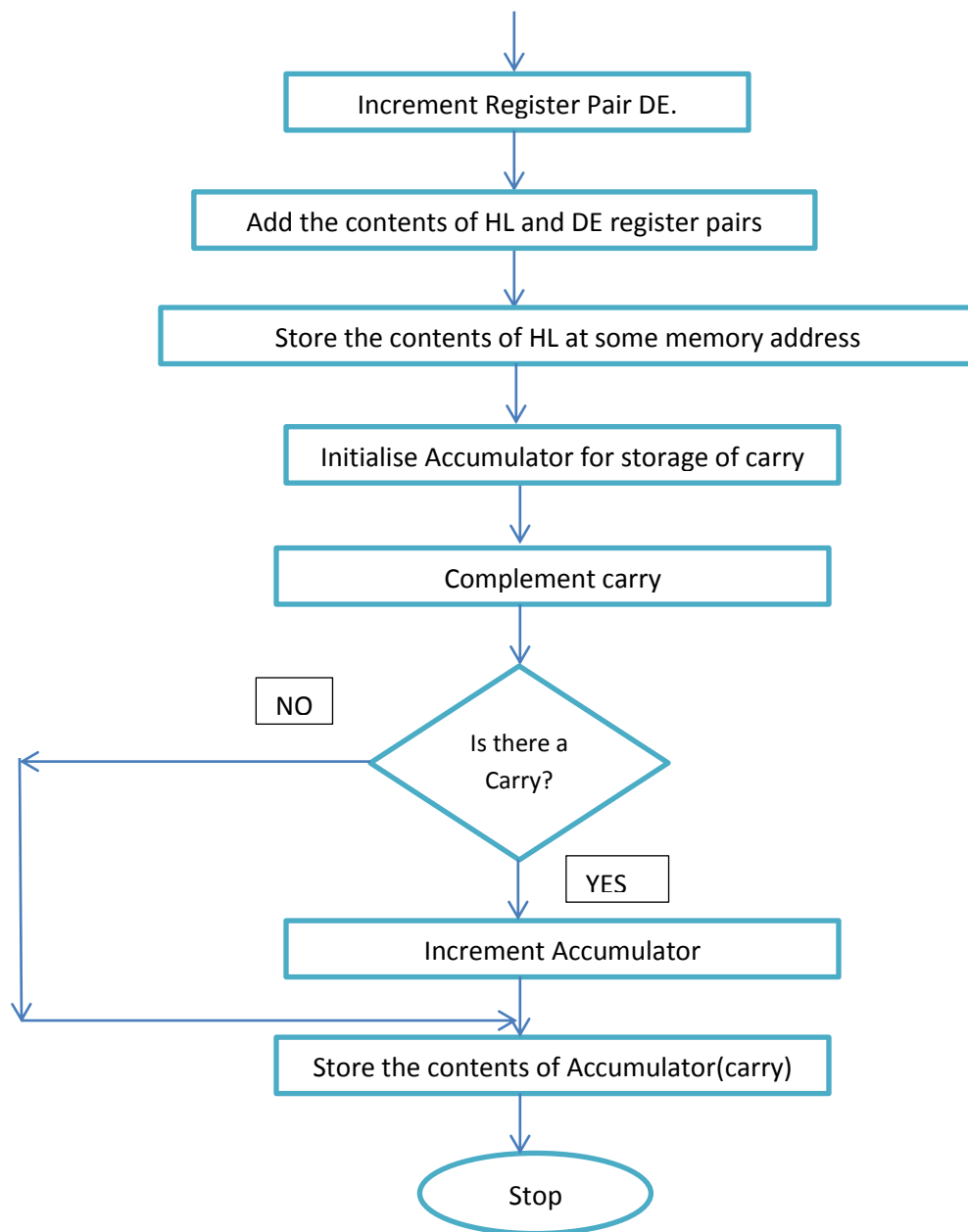
APPARATUS REQUIRED: 8085 Microprocessor Kit.

ALGORITHM:

1. Load the first 16 bit no. in Register Pair HL.
2. Load the second 16 bit no. in Register Pair DE.
3. Complement the number in the register pair using the Accumulator, by moving the contents of the DE Register Pair to the Accumulator, register by register.
4. Increment the contents of the DE Register Pair so that now we have the 2's complement of the second number.
5. Add the contents of the HL and DE Register Pairs.
6. Store the result at some memory address.
7. Store the complemented carry at some memory address.
8. End of Program.

FLOW CHART:





PROGRAM:

Memory Address	Mnemonics	Hex Codes	Remarks
2000	LXI H, 056FH	21	Load the First no. in H reg. pair
2001		6F	

2002		05	
2003	LXI D, 0AB5H	11	Load the second no. in D reg. pair.
2004		B5	
2005		0A	
2006	MOV A,E	7B	Move the contents of E to Accumulator
2007	CMA	2F	Complement the contents of Accumulator
2008	MOV E,A	5F	Move the contents of Accumulator to E
2009	MOV A,D	7A	Move the contents of E to Accumulator
200A	CMA	2F	Complement the contents of Accumulator
200B	MOV D,A	57	Move the contents of Accumulator to D
200C	INX D	13	Increment the register pair DE
200D	DAD D	19	Add the contents of HL to DE
200E	SHLD 2050H	22	Store the contents of HL at memory address 2050h
200F		50	Store the contents(CARRY) of accumulator at mem. Addr. 2052H
2010		20	
2011	CMC	3F	Complement carry
2012	XRA A	AF	Initialize Accumulator
2013	JNC 2017H	D2	Jump to address 2017H if no carry
2014		16	
2015		20	
2016	INR A	3C	Increment Accumulator
2017	STA 2052H	32	Store the contents of Accumulator at address 2052H
2018		52	
2019		20	

201A	HLT	76	End of Program.
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INPUT:

1st set:

First No. (D)=056FH

Second No. (H)=0AB5H

OUTPUT:

Difference: 46H(2050)

10H(2051)

CARRY: 00H(2052)

INPUT:

2nd set:

First No. (D)=ABF2_H

Second No. (H)=0EF6_H

OUTPUT:

SUM= E8 (2050)

BA (2051)

CARRY= 01(2052)

PRECAUTION:

Make sure that all the machine codes should be as specified in the program.