Flow Chart to Add Two 16-bit Numbers With Carry

Start

Load H-L pair with data from 3000 H

Exchange H-L pair with D-E pair

Load H-L pair with data from 3002 H

Load C with 0

Add D-E pair with H-L pair

If carry ?

No

Yes

Increment C

Store the result at location 3004 H

Move carry to Accumulator

Store the carry at location 3006 H

Stop
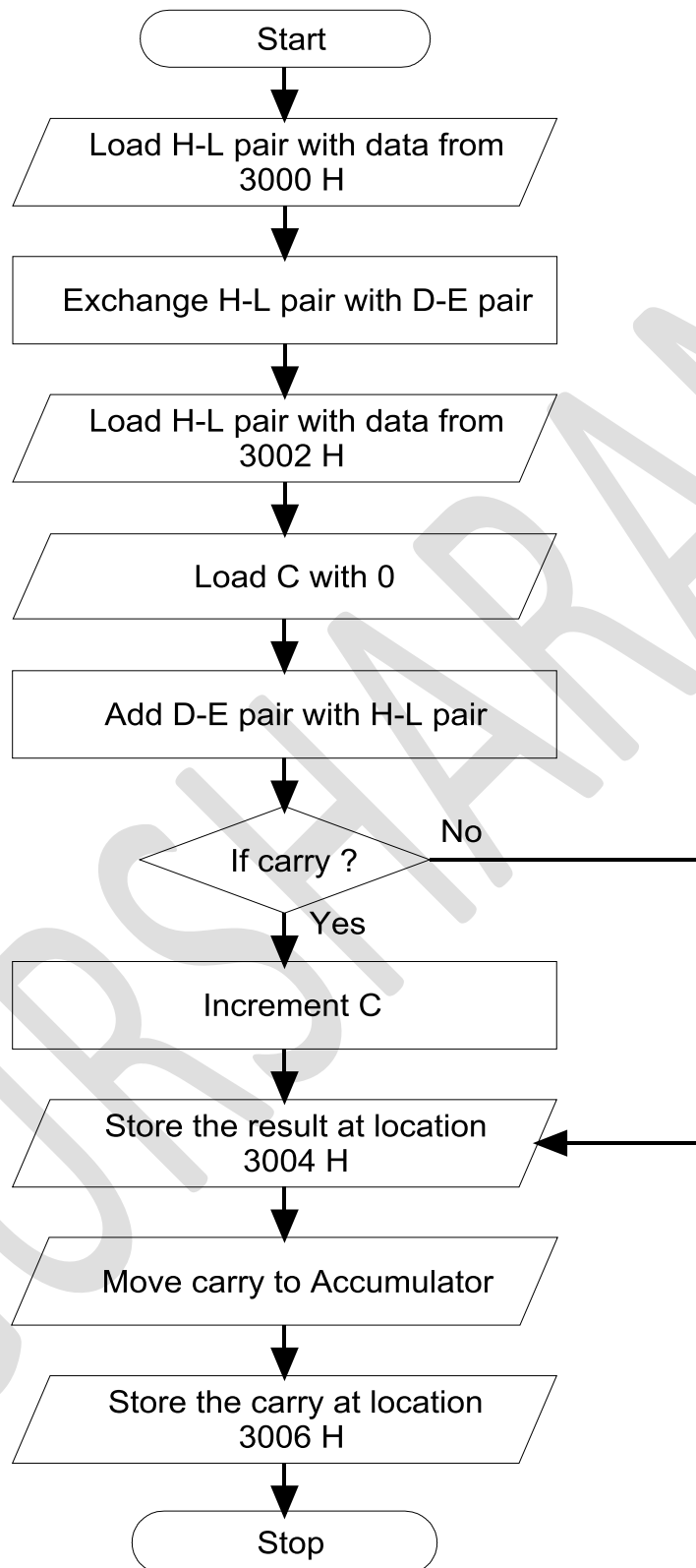
Program to Add Two 16-bit Numbers With Carry

Address	Mnemonics	Operand	Opcode	Remarks
2000	LHLD	3000 H	2A	Load H-L pair with data from 3000 H
2001			00	
2002			30	
2003	XCHG		EB	Exchange H-L pair with D-E pair
2004	LHLD	3002 H	2A	Load H-L pair with data from 3002 H
2005			02	
2006			30	
2007	MVI	C, 00 H	0E	Move 0 to C
2008			00	
2009	DAD	D	19	Add D-E pair with H-L pair
200A	JNC	200E H	D2	Jump to location 200E H if no carry
200B			0E	
200C			20	
200D	INR	C	0C	Increment C
200E	SHLD	3004 H	22	Store the result at location 3004 H
200F			04	
2010			30	
2011	MOV	A, C	79	Move carry from C to A
2012	STA	3006 H	32	Store the carry at location 3006 H
2013			06	
2014			30	
2015	HLT		76	Halt

Before Execution:

3000: 16 H
3001: 5A H
3002: 9A H
3003: 7C H

After Execution:

3004: B0 H
3005: 76 H
3006: 01 H