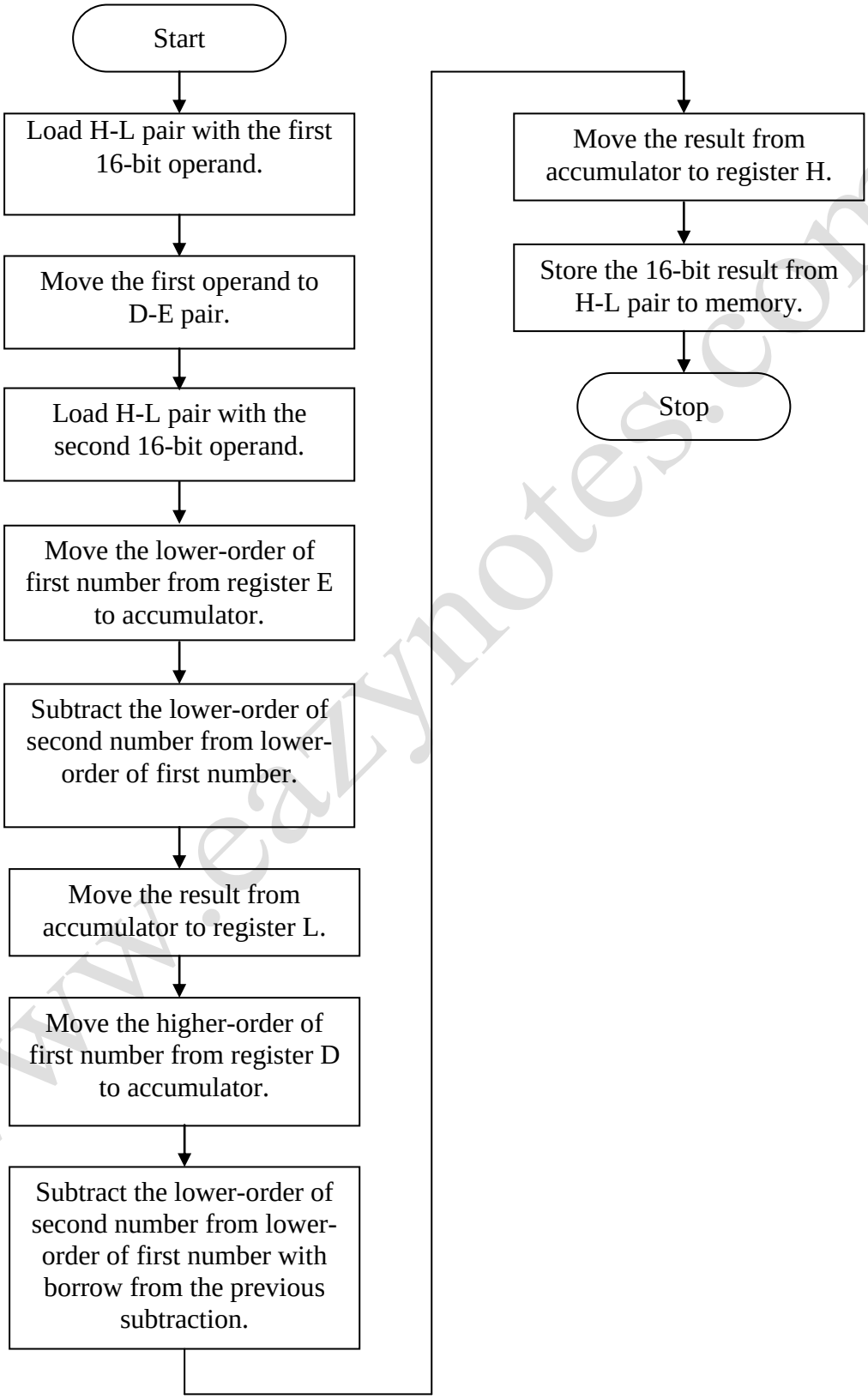
Program 14: Subtract two 16-bit numbers without considering the borrow.

Flowchart:



Program:

Address	Mnemonics	Operand	Opcode	Remarks
2000	LHLD	3000H	2A	Load H-L pair with 1st operand from 3000H.
2001			00	Lower-order of 3000H.
2002			30	Higher-order of 3000H.
2003	XCHG		EB	Exchange H-L pair with D-E pair.
2004	LHLD	3002H	2A	Load H-L pair with 2nd operand from 3002H.
2005			02	Lower-order of 3002H.
2006			30	Higher-order of 3002H.
2007	MOV	A, E	7B	Move the lower-order of 1st number from reg. E to reg. A.
2008	SUB	L	95	Subtract the lower-order of 2nd number from lower-order of 1st number.
2009	MOV	L, A	6F	Move the result from reg. A to register L.
200A	MOV	A, D	7A	Move the higher-order of 1st number from reg. D to reg. A.
200B	SBB	H	9C	Subtract the higher-order of 2nd number from higher-order of 1st number with borrow from the previous subtraction.
200C	MOV	H, A	67	Move the result from reg. A to reg. H.
200D	SHLD	3004H	22	Store the 16-bit result from H-L pair to memory.
200E			04	Lower-order of 3004H.
200F			30	Higher-order of 3004H.
2010	HLT		76	Halt.

Explanation:

- This program subtracts two 16-bit operands stored in memory locations 3000H-3001H and 3002H-3003H, without considering the borrow taken (if any).
- Let us assume that the operands stored at memory locations 3000H-3001H is 08H-06H and 3002H-3003H is 05H-04H.
- The H-L pair is loaded with the first 16-bit operand 0806H from memory locations 3000H-3001H.
- Then, the first 16-bit operand is moved to D-E pair.
- The second 16-bit operand 0504H is loaded to H-L pair from memory locations 3002H-3003H.
- The lower-order of first number is moved from register E to accumulator.

- The lower-order of 2nd number in register L is subtracted from lower-order of 1st number in accumulator.
- The result of subtraction is moved from accumulator to register L.
- Then, the higher-order of 1st number is moved from register D to accumulator.
- The higher-order of 2nd number in register H is subtracted from higher-order of first number in accumulator, along with the borrow from the previous subtraction.
- The result of subtraction is moved from accumulator to register H.
- Now, the final result is in H-L pair.
- The result is stored from H-L pair to memory locations 3004H-3005H.

Output:

Before Execution:		**After Execution:**	
3000H:	08H	3004H:	03H
3001H:	06H	3005H:	02H
3002H:	05H		
3003H:	04H		