Ex. 7.24.1 : Find the 1's complement of a number.

Program statement :

Find the 1's complement of the number stored at memory location C200H and store the complemented number at memory location C300H.

Explanation :

- 1's complement of a number means to invert each bit of that number. So, our task is to complement each bit of the number.
- We will first load the number in accumulator whose 1's complement is to be found.

- Then using the CMA instruction we will complement the accumulator. This is 1's complement of number.
- Store the result at memory location C300 H.

Let A = AAH

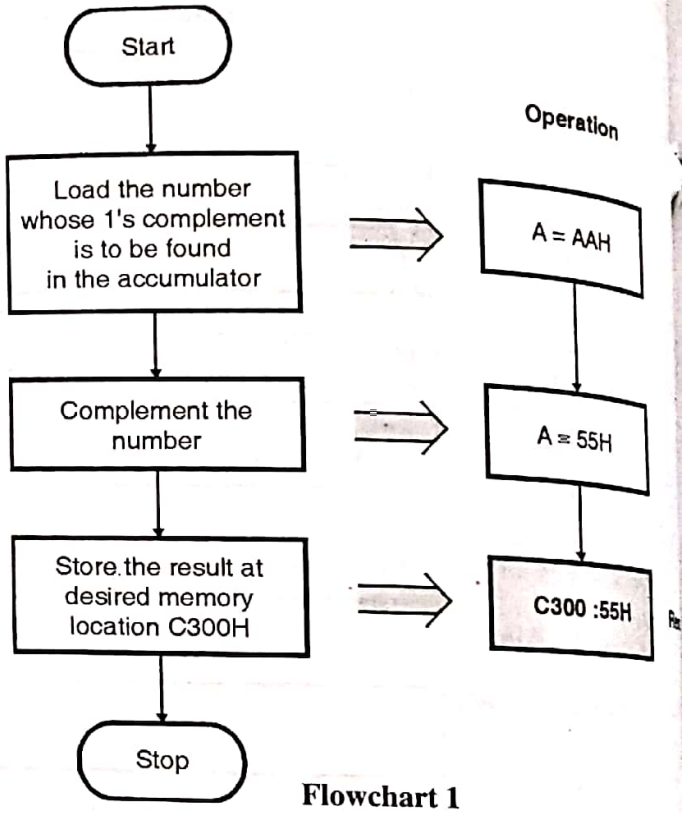
i.e. A : 10101010

1's complement of A : 01010101

Thus, 1's complement of A is 55H.

Program :

Instruction	Comments	Operation
LDA C200H	Load the number in accumulator	A = AA H
CMA	Complement the number	A = 55H
STA C300H	Store the 1's complement of number at memory location C300 H	C300 : 55H Result
HLT	Terminate program execution	Stop.



Flowchart : Refer flowchart 1.

Flowchart 1

Ex. 7.24.2 : Find 2's complement of a number. **(May 2005, Dec.2**

Program statement :

Find the 2's complement of the number stored at memory location C200H and store the complem number at memory location C300H.

Explanation :

- 2's complement means add 1 to 1's complement of that number.
- We will load the number in accumulator. Then using CMA instruction we will complemen accumulator. This is 1's complement of that number.
- Now we will add 1 to this complemented number to get 2's complement of the number.
- Store the result at memory location C300H.

Let A = 44 H (number)

A	0100 0100	44H
1's complement of A :	1011 1011	BBH
+	1	
2's complement of A :	1011 1100	BCH

The 2's complement of the number is BCH. We will store this result at memory location C300 H.

Program :

Instruct-ion	Comments	Operation
LDA C200H	Load the number in accumulator.	A = 44 H
CMA	Complement the number.	A = BBH

Instruct-ion	Comments	Operation
ADI 01H	Add 1 to the complemented number i.e. 2's complement of the number.	A = BCH F = 1×0×0×0
STA C300H	Store the result.	C300 : BC H Result
HLT	Terminate program execution.	Stop.

Refer Flowchart 2