20.Write an assembly language program to find 1's and 2's complement of 8 bit number.

AIM:

The program to find 1's and 2's complement of 8-bit number where starting address is 2000 and the number is stored at 3000 memory address and store result into 3001 and 3002 memory address.

ALGORITHM:-

1.Load the data from memory 3000 into A (accumulator)
2.Complement content of accumulator
3.Store content of accumulator in memory 3001 (1's complement)
4.Add 01 to Accumulator content
5.Store content of accumulator in memory 3002 (2's complement)
6.Stop .

EXPLANATION:-

1.A is an 8-bit accumulator which is used to load and store the data directly
2.LDA is used to load accumulator direct using 16-bit address (3 Byte instruction)
3.CMA is used to complement content of accumulator (1 Byte instruction)
4.STA is used to store accumulator direct using 16-bit address (3 Byte instruction)
5.ADI is used to add data into accumulator immediately (2 Byte instruction)
6.HLT is used to halt the program

PROGRAM:

MEMORY	MNEMONICS	OPERANDS	COMMENT
2000	LDA	[3000]	[A] <- [3000]
2003	CMA		[A] <- [A^]

MEMORY	MNEMONICS	OPERANDS	COMMENT
2004	STA	[3001]	1's complement
2007	ADI	01	[A] <- [A] + 01
2009	STA	[3002]	2's complement
200C	HLT		Stop

RESULT:- Thus the 1's & 2's complement using different locations has been executed successfully.