

Fibonacci Series

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FIBONACCI SERIES

AIM

To write an assembly language program to generate the Fibonacci series with given first two terms.

ASSEMBLY LANGUAGE PROGRAM

```

C100 LXI H C300    21 ; Load the HL register pair immediately
C101                00 ;
C102                C3 ;
C103 MOV B M      46 ; Move the memory content in to B register
C104 INX H        23 ; Increment the HL register pair
C105 MOV C M      4E ; Move the memory content in to C register
C106 DCR B        05 ; Decrement the B register content
C107 INX H        23 ; Increment the HL register pair
C108 MOV A M      7E ; Move the memory content in to accumulator
C109 DCR B        05 ; Decrement the B register content
C10A MOV D A      57 ; Move the accumulator content to D register
C10B ADD C        81 ; Add the C register content with accumulator
C10C INX H        23 ; Increment the HL register pair
C10D MOV M A      77 ; Move the accumulator content to memory
C10E MOV C D      4A ; Move the D register content to C register
C10F DCR B        05 ; Decrement the B register content
C110 JNZ C10A     C2 ; Jump if no zero to C10AH
C111                0A ;
C112                C1 ;
C113 HLT          76 ; Halt the execution

```

EXECUTION

```

C300 08 ; Number of input data
C301 00 ; 1st data (Input)
C302 01 ; 2nd data (Input)
C303 01 ; Series of Fibonacci (Output)
C304 02 ; Series of Fibonacci (Output)
C305 03 ; Series of Fibonacci (Output)
C306 05 ; Series of Fibonacci (Output)
C307 08 ; Series of Fibonacci (Output)
C308 0D ; Series of Fibonacci (Output)

```

PROGRAM TRACE

Addr	MC	Mnemonic	A	B	C	D	E	H	L	SP	Flag Word
			00	00	00	00	00	00	00	0000	0000 0000
C100	21	LXI H C300	00	00	00	00	00	C3	00	0000	0000 0000
C103	46	MOV B M	00	08	00	00	00	C3	00	0000	0000 0000
C104	23	INX H	00	08	00	00	00	C3	01	0000	0000 0000
C105	4E	MOV C M	00	08	00	00	00	C3	01	0000	0000 0000
C106	05	DCR B	00	07	00	00	00	C3	01	0000	0001 0000
C107	23	INX H	00	07	00	00	00	C3	02	0000	0001 0000
C108	7E	MOV A M	01	07	00	00	00	C3	02	0000	0001 0000
C109	05	DCR B	01	06	00	00	00	C3	02	0000	0001 0100
C10A	57	MOV D A	01	06	00	01	00	C3	02	0000	0001 0100
C10B	81	ADD C	01	06	00	01	00	C3	02	0000	0000 0000
C10C	23	INX H	01	06	00	01	00	C3	03	0000	0000 0000
C10D	77	MOV M A	01	06	00	01	00	C3	03	0000	0000 0000
C10E	4A	MOV C D	01	06	01	01	00	C3	03	0000	0000 0000
C10F	05	DCR B	01	05	01	01	00	C3	03	0000	0001 0100
C110	C2	JNZ C10A	01	05	01	01	00	C3	03	0000	0001 0100
C10A	57	MOV D A	01	05	01	01	00	C3	03	0000	0001 0100
C10B	81	ADD C	02	05	01	01	00	C3	03	0000	0000 0000
C10C	23	INX H	02	05	01	01	00	C3	04	0000	0000 0000
C10D	77	MOV M A	02	05	01	01	00	C3	04	0000	0000 0000
C10E	4A	MOV C D	02	05	01	01	00	C3	04	0000	0000 0000
C10F	05	DCR B	02	04	01	01	00	C3	04	0000	0001 0000
C110	C2	JNZ C10A	02	04	01	01	00	C3	04	0000	0001 0000
C10A	57	MOV D A	02	04	01	02	00	C3	04	0000	0001 0000
C10B	81	ADD C	03	04	01	02	00	C3	04	0000	0000 0100
C10C	23	INX H	03	04	01	02	00	C3	05	0000	0000 0100
C10D	77	MOV M A	03	04	01	02	00	C3	05	0000	0000 0100
C10E	4A	MOV C D	03	04	02	02	00	C3	05	0000	0000 0100
C10F	05	DCR B	03	03	02	02	00	C3	05	0000	0001 0100
C110	C2	JNZ C10A	03	03	02	02	00	C3	05	0000	0001 0100
C10A	57	MOV D A	03	03	02	03	00	C3	05	0000	0001 0100
C10B	81	ADD C	05	03	02	03	00	C3	05	0000	0000 0100
C10C	23	INX H	05	03	02	03	00	C3	06	0000	0000 0100
C10D	77	MOV M A	05	03	02	03	00	C3	06	0000	0000 0100
C10E	4A	MOV C D	05	03	03	03	00	C3	06	0000	0000 0100
C10F	05	DCR B	05	02	03	03	00	C3	06	0000	0001 0000
C110	C2	JNZ C10A	05	02	03	03	00	C3	06	0000	0001 0000
C10A	57	MOV D A	05	02	03	05	00	C3	06	0000	0001 0000
C10B	81	ADD C	08	02	03	05	00	C3	06	0000	0000 0000
C10C	23	INX H	08	02	03	05	00	C3	07	0000	0000 0000
C10D	77	MOV M A	08	02	03	05	00	C3	07	0000	0000 0000
C10E	4A	MOV C D	08	02	05	05	00	C3	07	0000	0000 0000
C10F	05	DCR B	08	01	05	05	00	C3	07	0000	0001 0000
C110	C2	JNZ C10A	08	01	05	05	00	C3	07	0000	0001 0000
C10A	57	MOV D A	08	01	05	08	00	C3	07	0000	0001 0000
C10B	81	ADD C	0D	01	05	08	00	C3	07	0000	0000 0000
C10C	23	INX H	0D	01	05	08	00	C3	08	0000	0000 0000

C10D	77	MOV MA	0D	01	05	08	00	C3	08	0000	0000 0000
C10E	4A	MOV CD	0D	01	08	08	00	C3	08	0000	0000 0000
C10F	05	DCR B	0D	00	08	08	00	C3	08	0000	0101 0100
C110	C2	JNZ C10A	0D	00	08	08	00	C3	08	0000	0101 0100
C113	76	HLT	0D	00	08	08	00	C3	08	0000	0101 0100

FLAG WORD

S	Z	x	Ac	x	P	x	Cy
0	1	0	1	0	1	0	0

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