Decimal to Binary Code conversion

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DECIMAL TO BINARY CODE CONVERSION

AIM

To write an assembly language program to convert the given decimal number in to binary number

ASSEMBLY LANGUAGE PROGRAM

```
C100 LXI H C200  21 ; Initialize the HL register pair
C101             00 ;
C102             C2 ;
C103 MOV C M     4E ; Move the memory content to C register
C104 MOV A C     79 ; Move the C register content to accumulator
C105 ANI 0F      E6 ; And the data byte of 0F(H) with the content of
C106             0F ; accumulator
C107 MOV E A     5F ; Move the content of accumulator to E
                      register
C108 MOV A C     79 ; Move the C register content to accumulator
C109 ANI F0      E6 ; And the data  byte F0(H) with the content of
C10A             F0 ; accumulator
C10B RRC         0F ; Rotate accumulator right through carry
C10C RRC         0F ; Rotate accumulator right through carry
C10D RRC         0F ; Rotate accumulator right through carry
C10E RRC         0F ; Rotate accumulator right through carry
C10F MOV D A     57 ; Move the accumulator content into D register
C110 MVI A 00    3E ; Move immediate 00(H) to accumulator
C111             00 ;
C112 ADI 0A      C6 ; Add immediate data 0A(H) to the accumulator
C113             0A ;
C114 DCR D       15 ; Decrement the D register
C115 JNZ C112    C2 ; Jump if no zero to C112(H)
C116             12 ;
C117             C1 ;
C118 ADD E       83 ; Add the content of E register to the
                      accumulator
C119 STA  C201   32 ; Store the accumulator content at C201(H)
C11A             01 ;
C11B             C2 ;
C11C HLT         76 ; Halt the execution
```

EXECUTION - 1

```
C200 14 ;Decimal number(Input data)
C201 0E ;Binary number(Output data)
```

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 C200	00	00	00	00	00	C2	00	0000	0000 0000
C103	4E	MOV C M	00	00	14	00	00	C2	00	0000	0000 0000
C104	79	MOV A C	14	00	14	00	00	C2	00	0000	0000 0000
C105	E6	ANI 0F	04	00	14	00	00	C2	00	0000	0001 0000
C107	5F	MOV E A	04	00	14	00	04	C2	00	0000	0001 0000
C108	79	MOV A C	14	00	14	00	04	C2	00	0000	0001 0000
C109	E6	ANI F0	10	00	14	00	04	C2	00	0000	0001 0000
C10B	0F	RRC	08	00	14	00	04	C2	00	0000	0001 0000
C10C	0F	RRC	04	00	14	00	04	C2	00	0000	0001 0000
C10D	0F	RRC	02	00	14	00	04	C2	00	0000	0001 0000
C10E	0F	RRC	01	00	14	00	04	C2	00	0000	0001 0000
C10F	57	MOV D A	01	00	14	01	04	C2	00	0000	0001 0000
C110	3E	MVI A 00	00	00	14	01	04	C2	00	0000	0001 0000
C112	C6	ADI 0A	0A	00	14	01	04	C2	00	0000	0000 0100
C114	15	DCR D	0A	00	14	00	04	C2	00	0000	0101 0100
C115	C2	JNZ C112	0A	00	14	00	04	C2	00	0000	0101 0100
C118	83	ADD E	0E	00	14	00	04	C2	00	0000	0000 0000
C119	32	STA C201	0E	00	14	00	04	C2	00	0000	0000 0000
C11C	76	HLT	0E	00	14	00	04	C2	00	0000	0000 0000

FLAG WORD

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

EXECUTION - 2

```
C200 28 ; Decimal number(Input data)
C201 1C ; Binary number(Output data)
```

PROGRAM TRACE

Addr	MC	Mnemonic	A	B	C	D	E	H	L	SP	Flag Word
C100	21	LXI H C200	00	00	00	00	00	C2	00	0000	0000 0000
C103	4E	MOV C M	00	00	28	00	00	C2	00	0000	0000 0000
C104	79	MOV A C	28	00	28	00	00	C2	00	0000	0000 0000
C105	E6	ANI 0F	08	00	28	00	00	C2	00	0000	0001 0000
C107	5F	MOV E A	08	00	28	00	08	C2	00	0000	0001 0000
C108	79	MOV A C	28	00	28	00	08	C2	00	0000	0001 0000
C109	E6	ANI F0	20	00	28	00	08	C2	00	0000	0001 0000
C10B	0F	RRC	10	00	28	00	08	C2	00	0000	0001 0000
C10C	0F	RRC	08	00	28	00	08	C2	00	0000	0001 0000
C10D	0F	RRC	04	00	28	00	08	C2	00	0000	0001 0000
C10E	0F	RRC	02	00	28	00	08	C2	00	0000	0001 0000
C10F	57	MOV D A	02	00	28	02	08	C2	00	0000	0001 0000
C110	3E	MVI A 00	00	00	28	02	08	C2	00	0000	0001 0000
C112	C6	ADI 0A	0A	00	28	02	08	C2	00	0000	0000 0100
C114	15	DCR D	0A	00	28	01	08	C2	00	0000	0001 0000
C115	C2	JNZ C112	0A	00	28	01	08	C2	00	0000	0001 0000
C112	C6	ADI 0A	14	00	28	01	08	C2	00	0000	0001 0100
C114	15	DCR D	14	00	28	00	08	C2	00	0000	0101 0100
C115	C2	JNZ C112	14	00	28	00	08	C2	00	0000	0101 0100
C118	83	ADD E	1C	00	28	00	08	C2	00	0000	0000 0000
C119	32	STA C201	1C	00	28	00	08	C2	00	0000	0000 0000
C11C	76	HLT	1C	00	28	00	08	C2	00	0000	0000 0000

FLAG WORD

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

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