

Binary to Decimal Code conversion

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BINARY TO DECIMAL CODE CONVERSION

AIM

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

ASSEMBLY LANGUAGE PROGRAM

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C000 MVI E 00      1E ; Move immediate 00H in to E register
C001              00 ;
C002 MOV D E      53 ; Move the E register content to D register
C003 LDA C200     3A ; Load the accumulator with binary number
C004              00 ;
C005              C2 ;
C006 CPI 64       FE ; Compare immediate data 64H
C007              64 ;
C008 JC C011      DA ; Jump if carry to C011H
C009              11 ;
C00A              C0 ;
C00B SUI 64       D6 ; Subtract immediate data 64H from accumulator
C00C              64 ;
C00D INR E        1C ; Increment the E register
C00E JMP C006     C3 ; Jump to C006H
C00F              06 ;
C010              C0 ;
C011 CPI 0A       FE ; Compare immediate data 0AH
C012              0A ;
C013 JC C01C      DA ; Jump if carry to C01CH
C014              1C ;
C015              C0 ;
C016 SUI 0A       D6 ; Subtract immediate data 0AH from accumulator
C017              0A ;
C018 INR D        14 ; Increment the D register
C019 JMP C011     C3 ; Jump to C011H
C01A              11 ;
C01B              C0 ;
C01C MOV C A      4F ; Move the accumulator content to C register
C01D MOV A D      7A ; Move the D register content to accumulator
C01E RLC          07 ; Rotate accumulator left through carry
C01F RLC          07 ; Rotate accumulator left through carry
C020 RLC          07 ; Rotate accumulator left through carry
C021 RLC          07 ; Rotate accumulator left through carry
C022 ADD C        81 ; Add the content of C register with
                   accumulator
C023 STA C201     32 ; Store the accumulator content at C201H
C024              01 ;
C025              C2 ;
C026 HLT         76 ; Halt the execution

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EXECUTION 1

C200 0E ;Binary number(Input data)

C201 14 ;Decimal 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
C000	1E	MVI E 00	00	00	00	00	00	00	00	0000	0000 0000
C002	53	MOV D E	00	00	00	00	00	00	00	0000	0000 0000
C003	3A	LDA C200	0E	00	00	00	00	00	00	0000	0000 0000
C006	FE	CPI 64	0E	00	00	00	00	00	00	0000	1001 0101
C008	DA	JC C011	0E	00	00	00	00	00	00	0000	1001 0101
C011	FE	CPI 0A	0E	00	00	00	00	00	00	0000	0001 0000
C013	DA	JC C01C	0E	00	00	00	00	00	00	0000	0001 0000
C016	D6	SUI 0A	04	00	00	00	00	00	00	0000	0001 0000
C018	14	INR D	04	00	00	01	00	00	00	0000	0000 0000
C019	C3	JMP C011	04	00	00	01	00	00	00	0000	0000 0000
C011	FE	CPI 0A	04	00	00	01	00	00	00	0000	1000 0101
C013	DA	JC C01C	04	00	00	01	00	00	00	0000	1000 0101
C01C	4F	MOV C A	04	00	04	01	00	00	00	0000	1000 0101
C01D	7A	MOV A D	01	00	04	01	00	00	00	0000	1000 0101
C01E	07	RLC	02	00	04	01	00	00	00	0000	1000 0100
C01F	07	RLC	04	00	04	01	00	00	00	0000	1000 0100
C020	07	RLC	08	00	04	01	00	00	00	0000	1000 0100
C021	07	RLC	10	00	04	01	00	00	00	0000	1000 0100
C022	81	ADD C	14	00	04	01	00	00	00	0000	0000 0100
C023	32	STA C201	14	00	04	01	00	00	00	0000	0000 0100
C026	76	HLT	14	00	04	01	00	00	00	0000	0000 0100

FLAG WORD

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

EXECUTION 2

C200 2D ;Binary number(Input data)

C201 45 ;Decimal 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
C000	1E	MVI E 00	00	00	00	00	00	00	00	0000	0000 0000
C002	53	MOV D E	00	00	00	00	00	00	00	0000	0000 0000
C003	3A	LDA C200	2D	00	00	00	00	00	00	0000	0000 0000
C006	FE	CPI 64	2D	00	00	00	00	00	00	0000	1001 0101
C008	DA	JC C011	2D	00	00	00	00	00	00	0000	1001 0101
C011	FE	CPI 0A	2D	00	00	00	00	00	00	0000	0001 0000
C013	DA	JC C01C	2D	00	00	00	00	00	00	0000	0001 0000
C016	D6	SUI 0A	23	00	00	00	00	00	00	0000	0001 0000
C018	14	INR D	23	00	00	01	00	00	00	0000	0000 0000
C019	C3	JMP C011	23	00	00	01	00	00	00	0000	0000 0000
C011	FE	CPI 0A	23	00	00	01	00	00	00	0000	0000 0000
C013	DA	JC C01C	23	00	00	01	00	00	00	0000	0000 0000
C016	D6	SUI 0A	19	00	00	01	00	00	00	0000	0000 0000
C018	14	INR D	19	00	00	02	00	00	00	0000	0000 0000
C019	C3	JMP C011	19	00	00	02	00	00	00	0000	0000 0000
C011	FE	CPI 0A	19	00	00	02	00	00	00	0000	0000 0100
C013	DA	JC C01C	19	00	00	02	00	00	00	0000	0000 0100
C016	D6	SUI 0A	0F	00	00	02	00	00	00	0000	0000 0100
C018	14	INR D	0F	00	00	03	00	00	00	0000	0000 0100
C019	C3	JMP C011	0F	00	00	03	00	00	00	0000	0000 0100
C011	FE	CPI 0A	0F	00	00	03	00	00	00	0000	0001 0100
C013	DA	JC C01C	0F	00	00	03	00	00	00	0000	0001 0100
C016	D6	SUI 0A	05	00	00	03	00	00	00	0000	0001 0100
C018	14	INR D	05	00	00	04	00	00	00	0000	0000 0000
C019	C3	JMP C011	05	00	00	04	00	00	00	0000	0000 0000
C011	FE	CPI 0A	05	00	00	04	00	00	00	0000	1000 0001
C013	DA	JC C01C	05	00	00	04	00	00	00	0000	1000 0001
C01C	4F	MOV C A	05	00	05	04	00	00	00	0000	1000 0001
C01D	7A	MOV A D	04	00	05	04	00	00	00	0000	1000 0001
C01E	07	RLC	08	00	05	04	00	00	00	0000	1000 0000
C01F	07	RLC	10	00	05	04	00	00	00	0000	1000 0000
C020	07	RLC	20	00	05	04	00	00	00	0000	1000 0000
C021	07	RLC	40	00	05	04	00	00	00	0000	1000 0000
C022	81	ADD C	45	00	05	04	00	00	00	0000	0000 0000
C023	32	STA C201	45	00	05	04	00	00	00	0000	0000 0000
C026	76	HLT	45	00	05	04	00	00	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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