



SAFALTA CLASS™

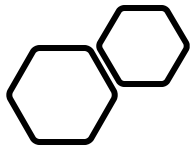
An Initiative by **अमरउजाला**

NUMBER SYSTEM

COMPUTER SPECIAL CLASS

SSC CGL / CHSL /
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11 SEP 2020 | 02:00 PM – 03:30 PM



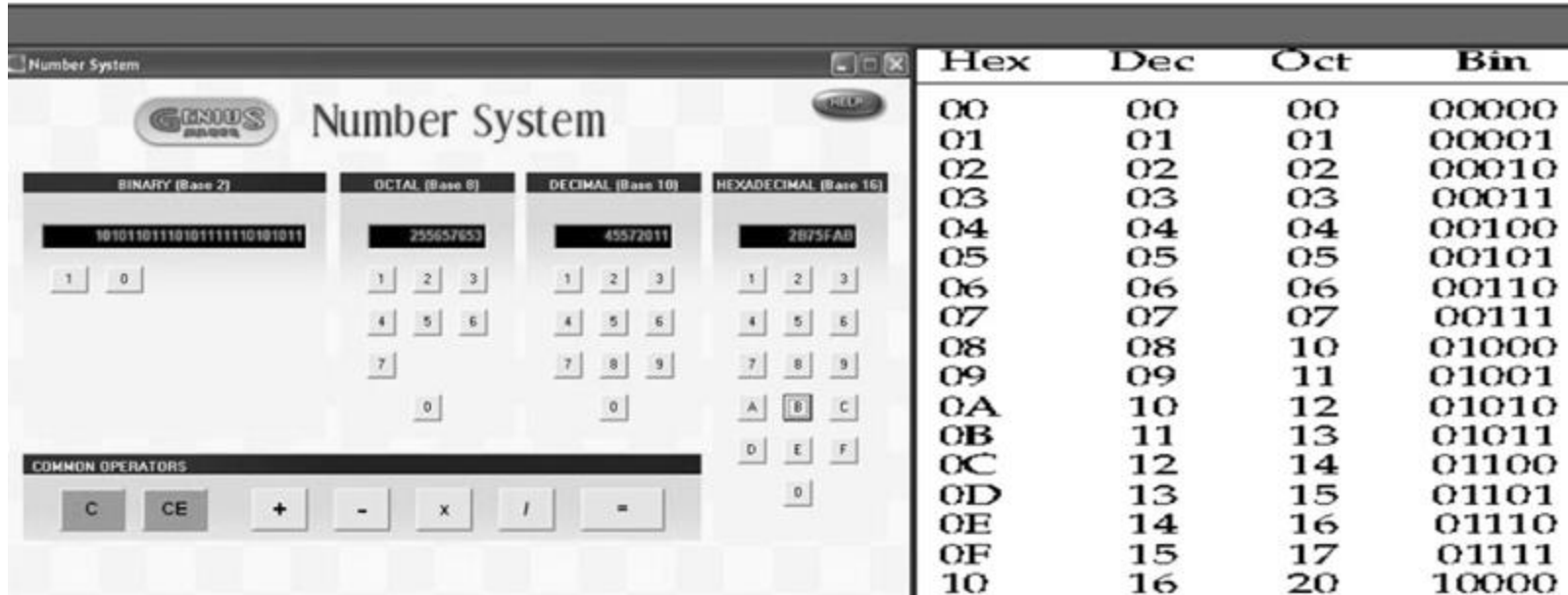
NUMBER SYSTEM

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NUMBER SYSTEM

The base value of a number system determines the number of symbols. In the system the place value of each digit is fixed.



The screenshot shows a software application titled 'Number System' with four calculator panels for different bases: BINARY (Base 2), OCTAL (Base 8), DECIMAL (Base 10), and HEXADECIMAL (Base 16). Each panel has a display and a keypad. Below the calculators is a 'COMMON OPERATORS' section with buttons for C, CE, +, -, x, /, and =.

Hex	Dec	Oct	Bin
00	00	00	00000
01	01	01	00001
02	02	02	00010
03	03	03	00011
04	04	04	00100
05	05	05	00101
06	06	06	00110
07	07	07	00111
08	08	10	01000
09	09	11	01001
0A	10	12	01010
0B	11	13	01011
0C	12	14	01100
0D	13	15	01101
0E	14	16	01110
0F	15	17	01111
10	16	20	10000

NUMBER SYSTEM

Number System	Base	Minimum value	Maximum Value
Binary	2	0	1
Octal	8	0	7
Decimal	10	0	9
Hexadecimal	16	0	F

BINARY NUMBER SYSTEM

- Binary (base 2)
 - Symbols (2): 0,1
 - Place:, 2^3 , 2^2 , 2^1 , 2^0

TO CONVERT FROM BINARY TO DECIMAL

➤ Binary $(10000100)_2$ into decimal

➤ Method 1

$$(1 \times 2^7) + (0 \times 2^6) + (0 \times 2^5) + (0 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (0 \times 2^1) + (0 \times 2^0)$$

$$\text{Ans } (10000100)_2 = (132)_{10}$$

➤ Binary $(10000100)_2$ into decimal

➤ Method 2

128	64	32	16	8	4	2	1
1	0	0	0	0	1	0	0

$$128 + 4 = 132$$

$$\text{Ans } (10000100)_2 = (132)_{10}$$

TO CONVERT FROM DECIMAL TO BINARY

➤ Decimal $(57)_{10}$ to binary

$(2)^5$	+	$(2)^4$	+	$(2)^3$	+	$(2)^2$	+	$(2)^1$	+	$(2)^0$
32		16		8		4		2		1
1		1		1		0		0		1

$$(57)_{10} = (111001)_2$$

TO CONVERT OCTAL INTO DECIMAL

➤ Octal (base 8)

➤ Symbols (8): 0, 1, 2, ..., 7

• Place:, $(8)^3, (8)^2, (8)^1, (8)^0$

➤ Method 1

➤ To convert octal 54 to decimal:

$$=(5 \times (8)^1) + (4 \times (8)^0)$$

$$=(44)_{10}$$

$$\text{Ans } (54)_8 = (44)_{10}$$

TO CONVERT HEXADECIMAL INTO DECIMAL

- Hexadecimal (base 16)
- Symbols (16): 0, 1, 2, ..., 9, A, B, C, D, E, F
 - Place:, $(16)^3, (16)^2, (16)^1, (16)^0$
- Method 1
- To convert hexadecimal 84 to decimal:

$$=(8 \times (16)^1) + (4 \times (16)^0)$$

$$=(132)_{10}$$

$$\text{Ans } (84)_{16} = (132)_{10}$$

TO CONVERT OCTAL INTO DECIMAL

➤ Method 2

➤ To convert hexadecimal 84 to decimal:

➤ Step 1

Convert $(84)_{16}$ into Binary

$$(84)_{16} = (10000100)_2$$

➤ Step 2

Convert $(10000100)_2$ into Decimal

$$(10000100)_2 = (132)_{10}$$

$$\text{Ans: } (84)_{16} = (132)_{10}$$

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