

Converting Decimal Numbers to Binary / Hexadecimal / Octal

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11:08 AM

teaching example: how to count in base 4: base dog

1
2
3
10
11
12
13
20
21
22
23
30
31
32
33
100

← "a dog of dogs"
= 4 dogs = 16 paws

$$\begin{aligned} 132_{\text{base dog}} &= \frac{1}{4^2} \quad \frac{3}{4^1} \quad \frac{2}{4^0} \\ &= 1 \times 4^2 + 3 \times 4^1 + 2 (\times 4^0) \\ &= 16 + 12 + 2 \\ &= 30_{\text{base 10}} \end{aligned}$$

binary

1
10
11

one base 10
two "

10	two	"
11		
100	four	