Lab2 Conversions Base 2,8,10,16

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CSC-17a

0.25_{10} 10→2

$0.25 \times 2 = 0.5$

$0.5 \times 2 = 1.0$ $\Rightarrow \boxed{0.01_2}$

$0.01_2 = 1 \times 2^{-2} = 1 \times \frac{1}{4} = 0.25$ ✓

10→8 $0.25 \times 8 = 2.0 \Rightarrow \boxed{0.2_8}$

$0.2_8 = 2 \times 8^{-1} = \frac{2}{8} = \frac{1}{4} = 0.25$ ✓

10→16 $0.25 \times 16 = 4.0 \Rightarrow \boxed{0.4_{16}}$

$0.4_{16} = 4 \times 16^{-1} = \frac{4}{16} = \frac{1}{4} = 0.25$ ✓

0.25_8

8→2 $\boxed{0.010101_2}$

8→10 $0.25_8 = 0.010101_2$

$= 1 \times 2^{-2} + 1 \times 2^{-4} + 1 \times 2^{-6} = \frac{16}{64} + \frac{4}{64} + \frac{1}{64} = \frac{21}{64} = \boxed{0.328125_{10}}$

8→16 $0.\underbrace{0101}_{5}\underbrace{0100}_{4}{}_2 = \boxed{54_{16}}$

$= 5 \times 16^{-1} + 4 \times 16^{-2} = 0.328125_{10}$ ✓

0.25_{16}

16→2 $0.\overbrace{0010}^{2}\overbrace{0101}^{5} = \boxed{0.00100101_2}$

16→8 $0.00100101_2 \Rightarrow \boxed{0.112_8}$

$0.\ 1\ \ 1\ \ 2_8$

16→10 $0.00100101_2 = 1 \times 2^{-3} + 1 \times 2^{-6} + 1 \times 2^{-8} = \boxed{0.14453125_{10}}$

0.1101_2

2→8 $0.\underbrace{110}_{6}\underbrace{100}_{4}{}_2 = \boxed{0.64_8}$

$0.\ 6\ \ 4_8$

2→10 $0.1101_2 = 1 \times 2^{-1} + 1 \times 2^{-2} + 1 \times 2^{-4} = \frac{8}{2^4} + \frac{4}{2^4} + \frac{1}{2^4} = \frac{13}{2^4}$

$= \boxed{0.8125_{10}}$

2→16 $0.\underbrace{1101}_{D},0000_2$

$\boxed{0.D_{16}}$