

Lab 2 Conversions Base 2, 8, 10, 16

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Convert 0.25_{10} to Base 2, 8, 16

$$0.25_{10} \times 16 = 4 \quad \therefore 0.25_{10} = 0.4_{16} = 0.0100_2 = 0.2_8$$

Convert 0.25_8 to Base 2, 10, 16

$$0.25_8 = 0.010101_2 = 0.01010100_2 = 0.54_{16}$$

$$0.25_8 = 2 \cdot 8^{-1} + 5 \cdot 8^{-2} = \frac{2}{8} + \frac{5}{64} = \frac{16}{64} + \frac{5}{64} = \frac{21}{64}_{10} = 0.328125_{10}$$

$$0.25_8 = 0.010101_2 = 0.54_{16} = \frac{21}{64}_{10} = 0.328125_{10}$$

Convert 0.25_{16} to Base 2, 8, 10

$$0.25_{16} = 0.00100101_2 = 0.112_8$$

$$0.25_{16} = 2 \cdot 16^{-1} + 5 \cdot 16^{-2} = \frac{2}{16} + \frac{5}{256} = \frac{32}{256} + \frac{5}{256} = \frac{37}{256}_{10} = 0.14453125_{10}$$

$$0.25_{16} = 0.00100101_2 = 0.112_8 = \frac{37}{256}_{10} = 0.14453125_{10}$$

Convert 0.1101_2 to Base 8, 10, 16

$$0.1101_2 = 0.D_{16}$$

$$0.1101_2 = 0.110100_2 = 0.64_8$$

$$0.1101_2 = 1 \cdot 2^{-1} + 1 \cdot 2^{-2} + 1 \cdot 2^{-4} = \frac{1}{2} + \frac{1}{4} + \frac{1}{16} = \frac{8}{16} + \frac{4}{16} + \frac{1}{16} = \frac{13}{16}_{10} = 0.8125_{10}$$

$$0.1101_2 = 0.D_{16} = 0.64_8 = \frac{13}{16}_{10} = 0.8125_{10}$$