

CS 51 – Homework #9

1. Convert **0.0625** to IEEE 754 single-precision binary representation

a. Express decimal as a whole number divided by a power of 2: $\frac{1}{16}$

b. Convert to normalized binary scientific notation: 1×2^{-4}

c. S = 0

d. Exponent (in binary) = 001111011

e. Fraction (in binary) = 1 , followed by 22 zeroes

2. Perform the following conversions and operations, expressing all answers in normalized binary scientific notation:

a. $0.875 = 1.11 \times 2^{-1}$

b. $0.375 = 1.1 \times 2^{-2}$

c. $0.875 - 0.375 = 1 \times 2^{-1}$

d. $0.875 * 0.375 = 1.0101 \times 2^{-2}$