Lab3 Post Lab Questions

1. (2 pts ea) For the equation below:

Cnew = Ca * F + Cb * (1 –F)

Let Ca = 0.75, Cb = 0.625. F = 0.325 . Give the 8 bit binary values for:

a. Ca= _____
b. Cb= _____
c. F = _____
d. 1-F = _____ (as calculated in this lab)
e. Ca*F = _____ (upper 8 bits only)
f. Cb * (1-F) = _____ (upper 8 bits only)
g. Cnew = _____ (8 bits)
h. Cnew _____ (decimal value)

2. (4 pts each) Remember that our calculation of Cnew is only an approximation. What is the correct value of Cnew without any approximations?

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What is the percent error between the correct value of Cnew and the approximate value of Cnew computed by the hardware ?
(compute as (Cnew_correct-Cnew_approximate)/Cnew_correct * 100 %

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How large is the absolute error in terms of Least Significant Bits ? (1 LSB = 1/256). Compute as (Cnew_correct-Cnew_approximate)/ (1/256) .

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3. (5 pts) What is the functionality of the Carry Chain in the Altera Flex 10K FPGA? What is the advantage of using carry chain logic over just using normal LUTs?