Tuesday Reading Assessment: Chapter 6

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1 Functions of Combinatorial Logic: Adders/Subtractors, Comparators, and Decoders/Encoders

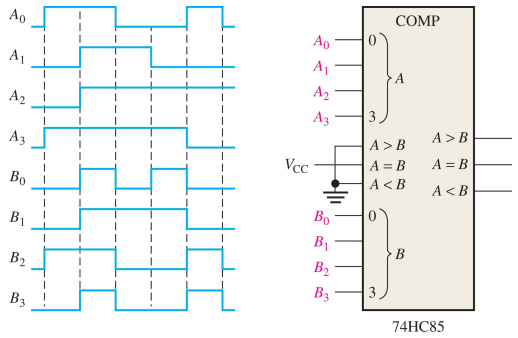

Figure 1: A logic circuit collecting two 4-bit binary numbers, with (effectively) one output.

1. Given the input timing diagram in Fig. 1, what is the output waveform of the logic circuit?

2. Figure 2 resembles a 4-bit FA (full adder). (a) The middle row of gates are XNOR gates. Show that B XNOR HIGH equals B, and that B XNOR LOW equals NOT B. (b) Taking A and B data from the first time bin in Fig. 1 (left), compute the Σ outputs if $A\bar{d}d/Subt$ is HIGH. (c) What would the outputs be if $A\bar{d}d/Subt$ is LOW?

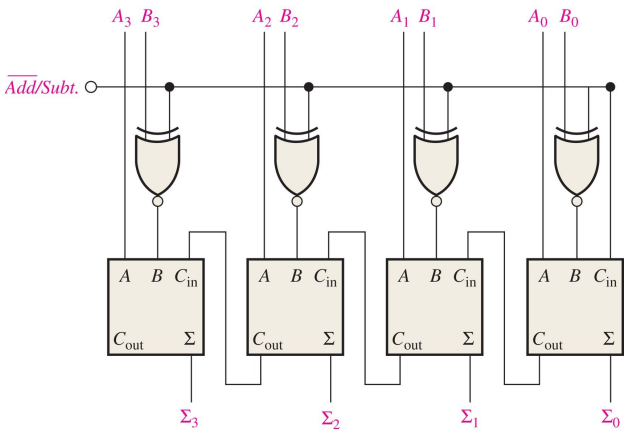

Figure 2: A 4-bit FA with an additional feature.