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CS220 Computer Architecture

Practical 5 Report

a. Create the 4-bit carry look-ahead adder circuit AS A MODULE with 9 inputs (initial carry-in and 2x4 bit numbers) and 5 outputs (4-bit sum and 1-bit final carry-out). When the module implementation is complete, create an instance of it in the main edit window.

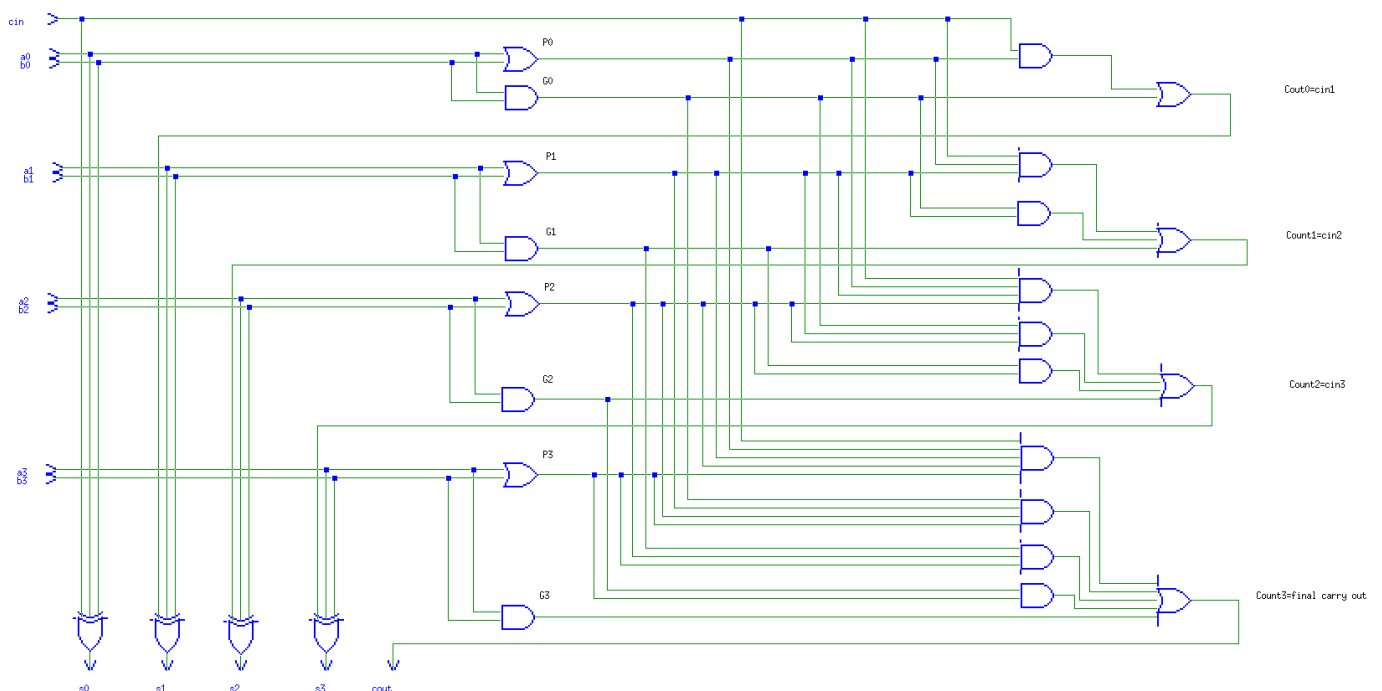
b. The relevant functions used in deriving the circuit

$$G_i = A_i.B_i; P_i = A_i + B_i;$$

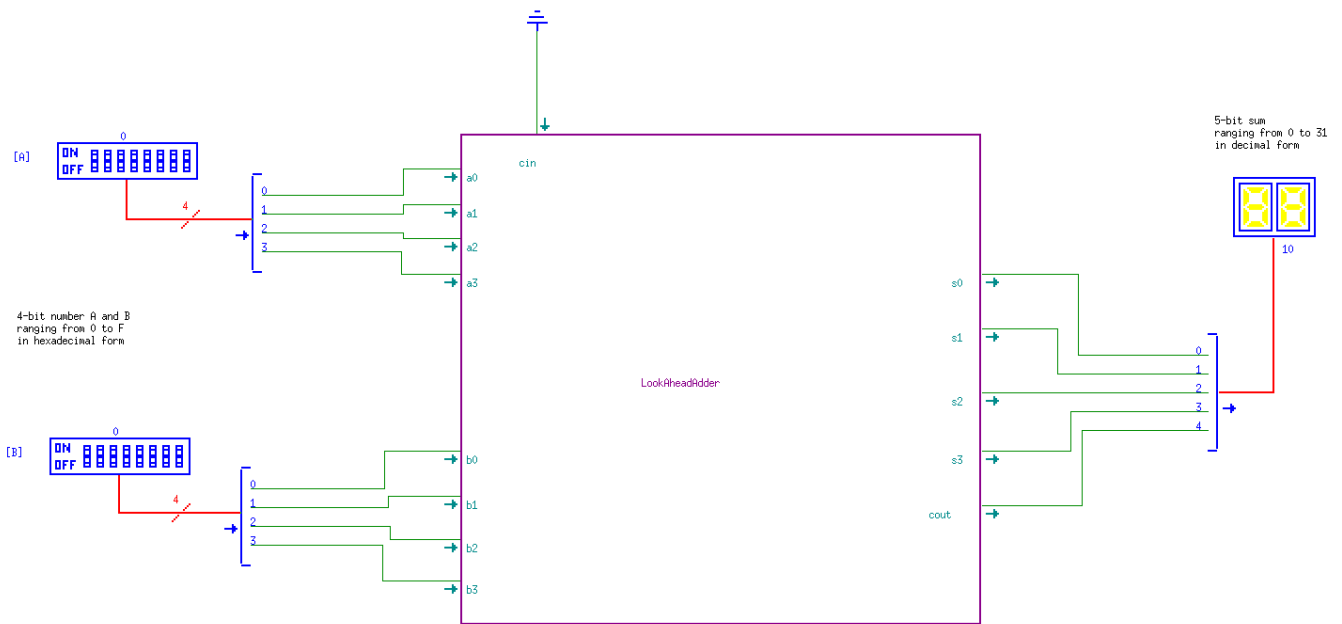
$$c-out_i = G_i + P_i.c-in_i$$

$$S_i = A_i \oplus B_i \oplus c-in_i$$

c. 1) The inner structure of the carry look-ahead adder circuit Module

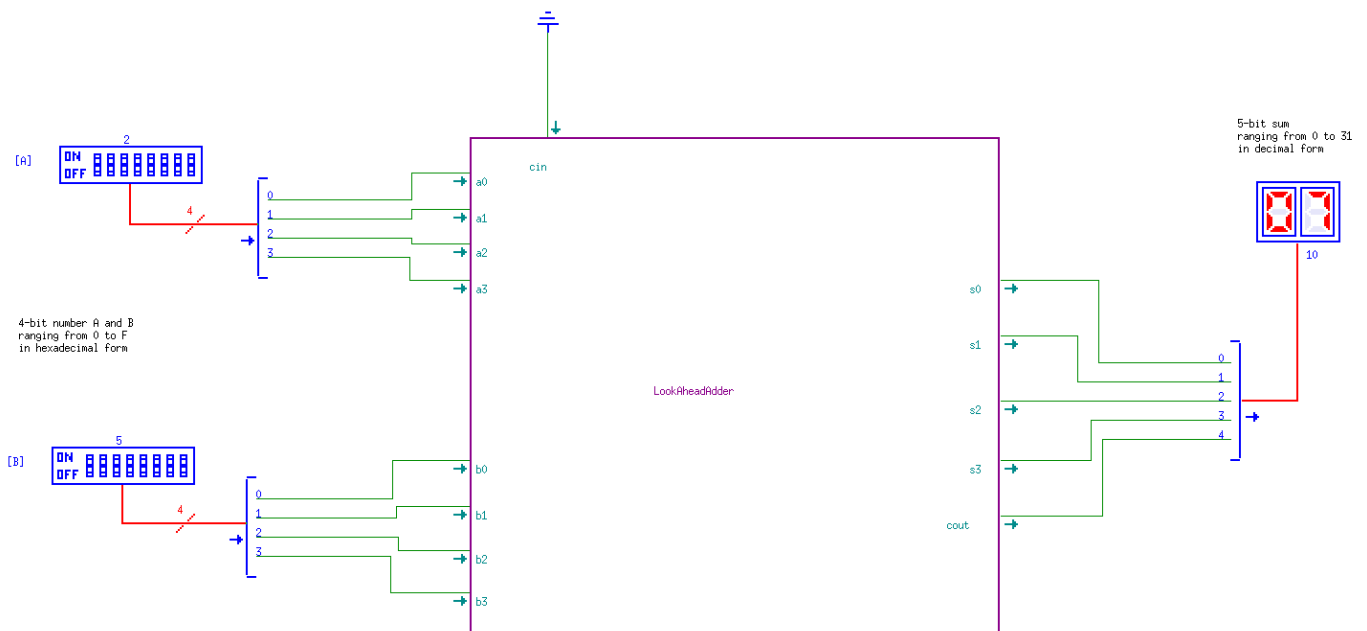


2) The implementation of a CLA circuit instance

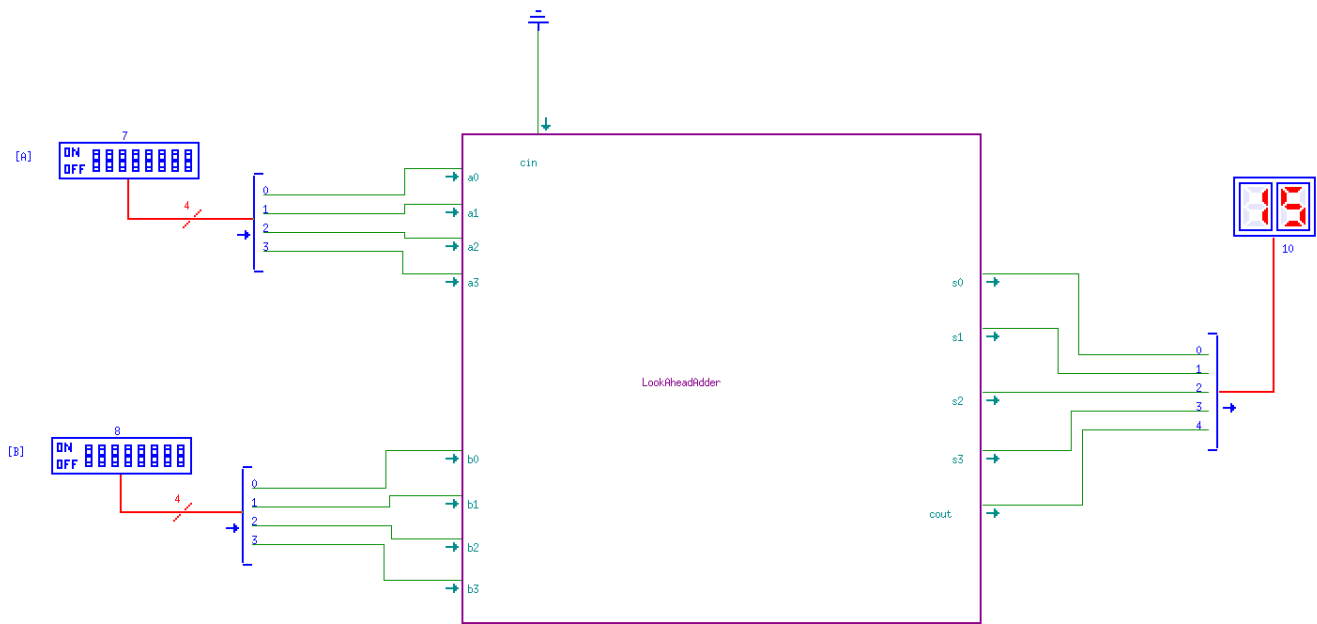


d. Verification of Experiment and Observations

e.g.,1 $A = 2, B = 5, \text{Sum} = 7$



e.g.,2 $A = 7, B = 8, \text{Sum} = 15$



e.g.,3 $A = d (13), B = e (14), \text{Sum} = 27$

