Research Migration Project

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Abstract: A 1-bit Arithmetic Logic Unit (ALU) is a basic digital circuit that performs simple arithmetic and logical operations on two single-bit inputs. It uses logic gates to implement functions like AND, OR, and XOR, and a full adder to handle arithmetic operations such as addition or subtraction. Control signals select the required operation through a multiplexer, and the circuit provides a single-bit result along with a carry output for arithmetic functions. Multiple 1-bit ALUs can be connected in series to form multi-bit ALUs used in processors and larger digital systems.

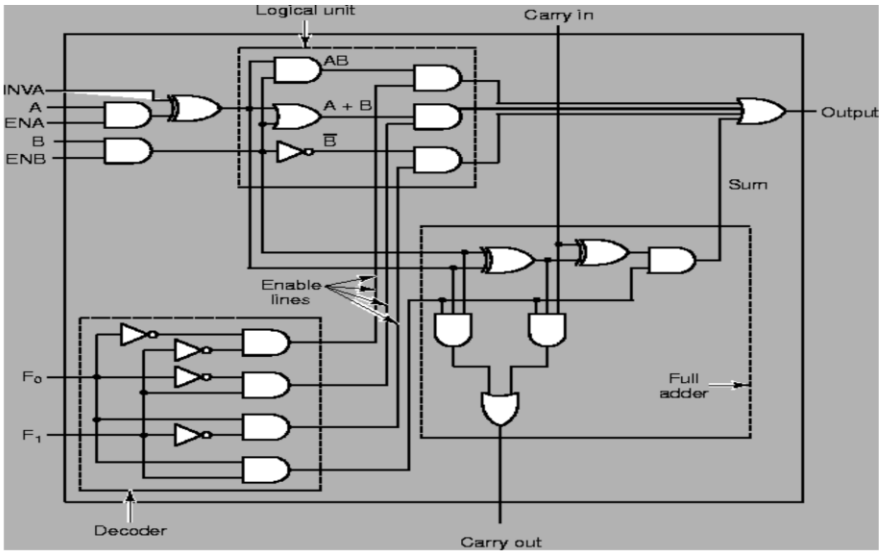

Figure 1: 1 bit ALU

Source/Reference(s):

1. Raj Lakshmi Shukla and Rajesh Mehra, "Design Analysis and Simulation of 1-bit Arithmetic Logic Unit on Different Foundaries," Proceedings of National Conference on Recent Advances in Electronics and Communication Engineering (RACE-2014), NITTTR Chandigarh, March 28-29, 2014