Circuit Simulation Project
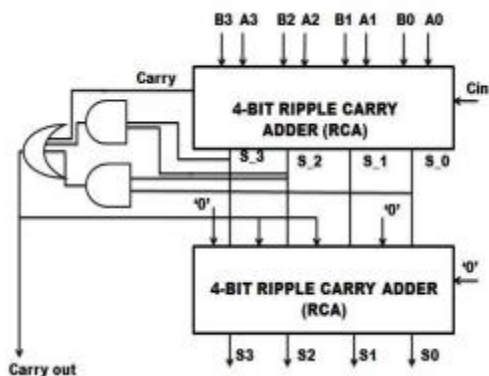
Name of the participant : Jovin P John

Title of the circuit : Conventional 4-bit BCD adder

Theory/Description : A Conventional BCD Adder takes two 4-bit BCD numbers and an input carry. First, a 4-bit ripple carry adder generates a binary sum. If this sum exceeds 9 (1001) or a carry is generated, the circuit adds 0110 (decimal 6) using another 4-bit adder. This correction ensures the result stays in valid BCD form, with any extra carry sent to the next decimal digit.

Circuit Diagram(s) :

Results (Input, Output waveforms and/or Multimeter readings) :

A	B	Cin	Out	Cout
1111	1111	1	0001	1
1110	1110	0	1000	1
1101	1101	1	0111	1
1100	1100	0	0100	1
1011	1011	1	0011	1
1010	1010	0	0000	1
1001	1001	1	1001	1
1000	1000	0	0110	1
0111	0111	1	0101	1
0110	0110	0	0010	1
0101	0101	1	0001	1
0100	0100	0	1000	0
0011	0011	1	0111	0
0010	0010	0	0100	0
0001	0001	1	0011	0
0000	0000	0	0000	0

Source/Reference(s) : Paul, R., & Shiby, B. (2016, March). On the design of a 4-bit BCD adder.International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, 5(Special Issue 4). National Conference on Signal Processing, Instrumentation and Communication Engineering (SPICE'16).