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Equal Method


Based on the circuit definition:
Circuit_1
2
2
0011
0101
1001
1100

Circuit_2
2
2
0011
0110
1010
1100

Circuit_1 and Circuit_2 are the same Circuit, just permute the output.
Therefore, no matter how you permute the table, input and output always remains the same counting of 1s and 0s. Therefore, we can create a vector to store the unique data with all same reusable circuit by store input with 0 count of 1s, 1 count of 1s, 2 count of 1s, etc. Inside each section, count how the output contain 1s. Therefore, we can form a table that all reusable circuit have the same checking vector. Then we can assume a integer to calculate the sum number for the vector, based on the index to perform different addition. Use then use the sum and built in hash function to get a hash number, if two circuit with different input number and output number, but have the same hash number, then it will compare the input number and output number, only both hash number and input, output are the same will be considered the reusable circuit.