n-bit adder/subtractor — X89356_en

Design a circuit that performs the addition or subtraction of two n-bit numbers. The result $(\bmod 2^n)$ must be represented in n bits also. The circuit has an input (op) that indicates which operation must be performed (0 for addition, 1 for subtraction).
The number of bits must be a parameter of the module, with a default value as shown in the specification.

Specification

module *add_sub* (*a*, *b*, *op*, *result*);
    parameter N=16;
    input [N−1:0] *a*, *b*;
    input *op*;
    output [N−1:0] *result*;

Input

- *a* and *b* are the two n-bit operands.
- *op* indicates the type of operation (0 for addition, 1 for subtraction).

Output

- *result* is the n-bit result of the operation $(\bmod 2^n)$.

Problem information

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