
n-bit adder/subtractor**X89356_en**

Design a circuit that performs the addition or subtraction of two n -bit numbers. The result $(\text{mod } 2^n)$ 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 $(\text{mod } 2^n)$.

Problem information

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