n-bit comparator   X37457_en

Design a circuit that compares two *n*-bit numbers represented in binary code and indicates whether the first is greater than, equal to or smaller than the second.
The number of bits of the numbers must be a parameter of the module with a default value as shown in the specification.

Specification

module *cmp*(*a*, *b*, *eq*, *gt*, *lt*);
    parameter *N*=16;
    input [*N*−1:0] *a*, *b*;
    output *eq*, *gt*, *lt*;

Hint

Design a 1-bit comparator that receives the result of the comparison of the least-significant bits. Use *n* instances of this circuit.

Input

- *a* and *b* are the two *n*-bit input numbers.

Output

- *eq* indicates that *a*=*b*.

- *gt* indicates that *a*>*b*.

- *lt* indicates that *a*<*b*.

Problem information

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