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

Author : Jordi Cortadella
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