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## Hamming distance

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The Hamming distance between two bit-vectors is defined as the number of bit locations in which the two vectors differ. For example, the Hamming distance of the vectors 00110 and 10100 is 2. Design a circuit that calculates the Hamming distance of two 3-bit vectors. The distance should be represented with a 2-bit number.

### Specification

```
module hamming3(a, b, distance);  
    input [2:0] a, b;  
    output [1:0] distance ;
```

### Input

- $a$  and  $b$  are the two 3-bit inputs.

### Output

- $distance$  represents the Hamming distance of the two input numbers.

### Problem information

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