# **AND Product**



Consider two non-negative long integers, a and b, where  $a \le b$ . The bitwise AND of all long integers in the inclusive range between a and b can be expressed as  $a \& (a+1) \& \ldots \& (b-1) \& b$ , where & is the bitwise AND operator.

Given n pairs of long integers, a[i] and b[i], compute and print the bitwise AND of all natural numbers in the inclusive range between a[i] and b[i].

For example, if a=10 and b=14, the calculation is 10 & 11 & 12 & 13 & 14=8 .

## **Function Description**

Complete the andProduct in the editor below. It should return the computed value as an integer.

andProduct has the following parameter(s):

- a: an integer
- b: an integer

### **Input Format**

The first line contains a single integer n, the number of intervals to test. Each of the next n lines contains two space-separated integers a[i] and b[i].

#### **Constraints**

- $1 \le n \le 200$
- $0 \le a[i] \le b[i] < 2^{32}$

#### **Output Format**

For each pair of long integers, print the bitwise AND of all numbers in the inclusive range between a[i] and b[i] on a new line.

#### Sample Input 0

```
3
12 15
2 3
8 13
```

#### Sample Output 0

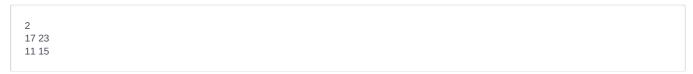
```
12
2
8
```

## **Explanation 0**

There are three pairs to compute results for:

- 1. a = 12 and b = 1512 & 13 & 14 & 15 = 12, so we print 12 on a new line.
- 2. a = 2 and b = 32 & 3 = 2
- 3. a = 8 and b = 138 & 9 & 10 & 11 & 12 & 13 = 8

# Sample Input 1



# Sample Output 1

