AND Product

by shaka_shadows

Consider two non-negative long integers, a and b, where $a \leq b$. 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.

Input Format

The first line contains a single integer, n, denoting the number of intervals to calculate results for.
Each line i of the n subsequent lines contains two space-separated long integers describing the respective values of a_i and b_i.

Constraints

- $1 \leq n \leq 200$
- $0 \leq a \leq b < 2^{32}$

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

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

Sample Output

```
12
2
8
```

Explanation

There are three pairs to compute results for:

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

Submissions:11233

Max Score:40
Difficulty: Medium

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Java 7

```
1  import java.io.*;
2  import java.util.*;
3  import java.text.*;
4  import java.math.*;
5  import java.util.regex.*;
6
7  public class Solution {
8
9      public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

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