code jam
print "hello, world!"

Practice Mode

Contest scoreboard | Sign in

Round 1A 2010

A. Rotate

B. Make it Smooth

C. Number Game

Contest Analysis

Questions asked 1

- Submissions

Rotate

11pt	Not attempted **2076/2436 users** correct (85%)
12pt	Not attempted **1855/2071 users** correct (90%)

Make it Smooth

12pt	Not attempted **509/954 users** correct (53%)
24pt	Not attempted **319/482 users** correct (66%)

Number Game

16pt	Not attempted **680/1091 users** correct (62%)
25pt	Not attempted **244/450 users** correct (54%)

- Top Scores

rng..58	100
Pipi	100
cgy4ever	100
rem	100
XiaoZiqian	100
qizichao	100
exod40	100
GarnetCrow	100
hos.lyric	100
ACRush	100

Problem C. Number Game

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input 16 points	Solve C-small
Large input 25 points	Solve C-large

Problem

Arya and Bran are playing a game. Initially, two positive integers **A** and **B** are written on a blackboard. The players take turns, starting with Arya. On his or her turn, a player can replace **A** with **A** - **k***B** for any positive integer **k**, or replace **B** with **B** - **k***A** for any positive integer **k**. The first person to make one of the numbers drop to zero or below loses.

For example, if the numbers are initially (12, 51), the game might progress as follows:

- Arya replaces 51 with 51 - 3*12 = 15, leaving (12, 15) on the blackboard.
- Bran replaces 15 with 15 - 1*12 = 3, leaving (12, 3) on the blackboard.
- Arya replaces 12 with 12 - 3*3 = 3, leaving (3, 3) on the blackboard.
- Bran replaces one 3 with 3 - 1*3 = 0, and loses.

We will say (**A**, **B**) is a *winning* position if Arya can always win a game that starts with (**A**, **B**) on the blackboard, no matter what Bran does.

Given four integers $\mathbf{A_1}$, $\mathbf{A_2}$, $\mathbf{B_1}$, $\mathbf{B_2}$, count how many winning positions (**A**, **B**) there are with $\mathbf{A_1} \le \mathbf{A} \le \mathbf{A_2}$ and $\mathbf{B_1} \le \mathbf{B} \le \mathbf{B_2}$.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow, one per line. Each line contains the four integers $\mathbf{A_1}$, $\mathbf{A_2}$, $\mathbf{B_1}$, $\mathbf{B_2}$, separated by spaces.

Output

For each test case, output one line containing "Case #x: y", where x is the case number (starting from 1), and y is the number of winning positions (**A**, **B**) with $\mathbf{A_1} \le \mathbf{A} \le \mathbf{A_2}$ and $\mathbf{B_1} \le \mathbf{B} \le \mathbf{B_2}$.

Limits

$1 \le \mathbf{T} \le 100$.
$1 \le \mathbf{A_1} \le \mathbf{A_2} \le 1{,}000{,}000$.
$1 \le \mathbf{B_1} \le \mathbf{B_2} \le 1{,}000{,}000$.

Small dataset

$\mathbf{A_2} - \mathbf{A_1} \le 30$.
$\mathbf{B_2} - \mathbf{B_1} \le 30$.

Large dataset

$A_2 - A_1 \leq 999{,}999$.
$B_2 - B_1 \leq 999{,}999$.

No additional constraints.

Sample

Input	Output
3 5 5 8 8 11 11 2 2 1 6 1 6	Case #1: 0 Case #2: 1 Case #3: 20