



Code Jam to I/O 2016 for Women

- A. Cody's Jams
- B. Dance Around The Clock
- C. Polynesiaglot
- D. Password Security

Contest Analysis

Questions asked

Submissions	
Cody's Jams	
10pt	Not attempted 353/478 users correct (74%)
10pt	Not attempted 323/346 users correct (93%)
Dance Around The Clock	
10pt	Not attempted 270/304 users correct (89%)
15pt	Not attempted 98/246 users correct (40%)
Polynesiaglot	
5pt	Not attempted 164/201 users correct (82%)
10pt	Not attempted 126/152 users correct (83%)
10pt	Not attempted 110/123 users correct (89%)
Password Security	
10pt	Not attempted 140/173 users correct (81%)
20pt	Not attempted 27/106 users correct (25%)

Top Scores	
Stacy992	100
shhuang	100
xeina	100
Javanochka	100
sim3995	100
Leylaa	100
nnetogrof	100
WYOCMWYH	100
Devushka	100
KashinYana	100

Practice Mode

[Contest scoreboard](#) | [Sign in](#)

Problem B. Dance Around The Clock

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
10 points

[Download B-small-practice.in](#)

your output file: No file chosen

source file(s): not needed for the practice contest

Large input
15 points

[Download B-large-practice.in](#)

your output file: No file chosen

source file(s): not needed for the practice contest

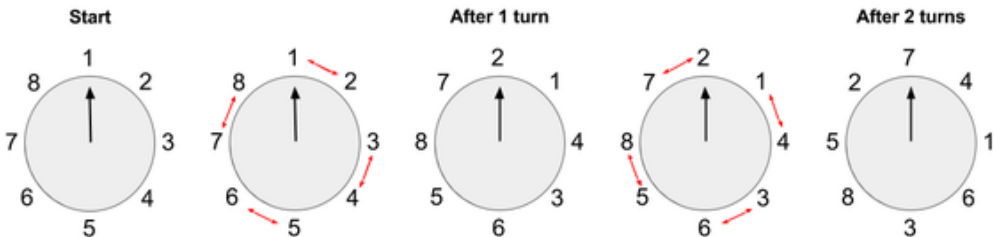
Problem

The owner of a prestigious ballroom has painted a beautiful circular clock on the dance floor, and a group of **D** dancers numbered 1 through **D** are about to literally "dance around the clock". They are standing in a circle, with dancer 1 at the 12:00 position of the circle and the other dancers going clockwise around the circle in increasing numerical order. The number of dancers is even.

The dance will go on for **N** turns. On the *i*-th turn (counting starting from 1), the following will happen:

- If *i* is odd, then the dancer currently at the 12:00 position will swap positions with the next dancer in clockwise order. Then, going past those two, the next pair of dancers in clockwise order will swap positions, and so on, all the way around the ring clockwise, until all dancers have participated in exactly one swap.
- If *i* is even, then the dancer currently at the 12:00 position will swap positions with the next dancer in counterclockwise order. Then, going past those two, the next pair of dancers in counterclockwise order will swap positions, and so on, all the way around the ring counterclockwise, until all dancers have participated in a swap.

For example, this diagram shows the initial state and two turns of a dance with eight people.



Which two dancers will be next to dancer number **K** when the dance is over?

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each consists of one line with three integers **D**, **K**, and **N**: the total number of dancers, the number of one of the dancers, and the number of turns the dance will go on for.

Output

For each test case, output one line containing Case #x: y z, where:

- x is the test case number (starting from 1).
- y is the number of the dancer who will be standing to dancer number K's left (that is, one step away in clockwise order) when the dance is over.
- z is the number of the dancer who will be standing to dancer number K's right (that is, one step away in counterclockwise order) when the dance is over.

Limits

$1 \leq T \leq 100$.

D is even.

$1 \leq K \leq D$.

Small dataset

$4 \leq D \leq 10$.

$1 \leq N \leq 10$.

Large dataset

$4 \leq D \leq 10^8$.

$1 \leq N \leq 10^8$.

Sample

Input	Output
3	Case #1: 6 4
8 3 1	Case #2: 1 7
8 4 2	Case #3: 2 4
4 1 8	

For Cases #1 and #2, refer to the illustration above. In Case #1, after 1 turn, dancer 6 is to dancer 3's left, and dancer 4 is to dancer 3's right. In Case #2, after 2 turns, dancer 1 is to dancer 4's left, and dancer 7 is to dancer 4's right. Remember that you're looking from the dancer's perspective; it may help to think in terms of clockwise and counterclockwise instead of left and right.

In Case #3, after eight turns, the arrangement looks the same as the initial arrangement, with dancer 2 to dancer 1's left, and dancer 4 to dancer 1's right.

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