

Round 3 2012

A. Perfect Game

[B. Havannah](#)

[C. Quality Food](#)

[D. Lost Password](#)

[Contest Analysis](#)

[Questions asked](#)

Submissions

Perfect Game

3pt	Not attempted 395/397 users correct (99%)
7pt	Not attempted 188/370 users correct (51%)

Havannah

8pt	Not attempted 105/186 users correct (56%)
12pt	Not attempted 58/87 users correct (67%)

Quality Food

9pt	Not attempted 84/184 users correct (46%)
18pt	Not attempted 34/60 users correct (57%)

Lost Password

7pt	Not attempted 157/168 users correct (93%)
36pt	Not attempted 1/3 users correct (33%)

Top Scores

EgorKulikov	64
Eryx	64
SnapDragon	64
eatmore	64
bmerry	64
Ahyangyi	64
squark	64
andrewzta	64
Vasyl	57
misof	53

Problem A. Perfect 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
3 points

Solve A-small

Large input
7 points

Solve A-large

Problem

You're playing a video game, in which you will get an achievement if you complete all of the levels consecutively without dying. You can play the levels in any order, and each time you play a level you'll either complete it or die. Each level has some probability that you'll complete it, and takes some amount of time. In what order should you play the levels so that the expected time it takes you to get the achievement is minimized? Assume that it takes equally long to beat a level or to die in it, and that you will start again from the first level in your ordering as soon as you die.

Note: If you fail to complete a level, you do not personally die—only your character in the game dies. If that were not the case, only a few people would try to earn this achievement.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow, each of which consists of three lines. The first line of each test case contains a single integer **N**, the number of levels. The second line contains **N** space-separated integers **L_i**. **L_i** is the number of seconds level **i** lasts, which is independent of whether you complete the level or die. The third line contains **N** space-separated integers **P_i**. **P_i** is the percent chance that you will *die* in any given attempt to complete level **i**.

Output

For each test case, output one line containing "Case #x: ", where **x** is the case number (starting from 1), followed by **N** space-separated integers. The **jth** integer in the list should be the index of the **jth** level you should attempt to beat in order to minimize the amount of time you expect to spend earning the achievement.

Indices go from 0 to **N** - 1. If there are multiple orderings that would give the same expected time, output the lexicographically least ordering. Out of two orderings, the lexicographically smaller one is the one with the smaller index at the first location where they differ; out of many orderings, the lexicographically least one is the one that is lexicographically smaller than every other ordering.

Limits

1 ≤ **T** ≤ 100.
0 ≤ **P_i** < 100.

Small dataset

1 ≤ **N** ≤ 20.
L_i = 1.

Large dataset

1 ≤ **N** ≤ 1000.
1 ≤ **L_i** ≤ 100.

Sample

Input	Output
3	Case #1: 0 2 3 1
4	Case #2: 1 0 2
1 1 1 1	Case #3: 2 0 1
50 0 20 20	
3	
100 10 1	
0 50 0	
3	
100 80 50	
40 20 80	

Note that the second and third samples do not satisfy the constraints for the small input.

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