1262 – Diagonal Sum

You are given an **m x n** grid containing an integer in each cell. You have a software that sends rays thorough each diagonal and calculates the sum of all the diagonals. The software sends the rays in two phases, in first phase; it sends **n + m - 1** rays as in fig 1, in second phase; it sends **n + m - 1** rays as in fig 2. When a ray completes its cells, it calculates the summation of the integers in the cells it has visited. For example, you are given a **7 x 6** grid. Then the rays are:

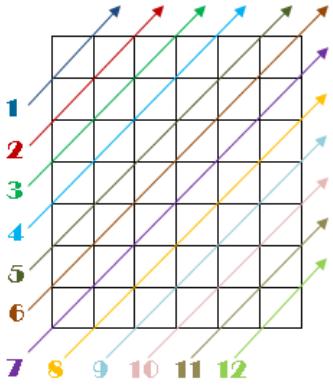

Fig 1: order of the rays in first phase

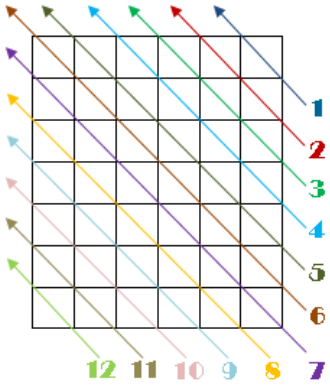

Fig 2: order of the rays in second phase

Each of the integers in the cells lies in the range **[1, 100]**. Now you are given the summation found by the rays in both phases, your task is to generate the grid.

Input

Input starts with an integer **T (≤ 50)**, denoting the number of test cases.

Each case starts with a line containing two integers: **m** and **n (1 ≤ m, n ≤ 50)**. The next line contains **n + m - 1** integers (space separated) denoting the summation found by the rays in phase 1. The next line contains **n + m - 1** integers (space separated) denoting the summation found by the rays in phase 2. You can assume that these values are generated from a board which follows the restrictions described above.

Output

For each case, print the case number in a line. Then print the grid using the following format. Print **m** lines, each containing **n** integers, and two consecutive integers should be separated by a single space. Since there can be many solutions, print any valid one.

Sample Input	Output for Sample Input
1 2 3 2 8 11 5 9 12 4 1	Case 1: 2 7 9 1 2 5

Note

This is a special judge problem; wrong output format may cause 'wrong answer'.