

PAINTAB

Bom loves solving problems relating to tables. Recently, Cuoi reminds Bom a problem: Let's consider a table consisting of N rows and M columns. The rows are numbered from 1 to N , from top to bottom, and the columns are numbered from 1 to M , from left to right. You have two sequences of non-negative integers:

$$a_1, a_2, \dots, a_N,$$

$$b_1, b_2, \dots, b_M.$$

Find a way to paint the table that the number of painted cell in column i th is a_i and the number of painted cell in row j th is b_j .

We can easily see that the solution for this problem is not always exist. Bom solved this problem when he started to learn how to code; however, he can not remember it.

Your task is write a program which check the problem has a solution or not.

Input

- The first line contains number T ($1 \leq T \leq 5$) – the number of testcases.
- After the first line, there are T groups of lines, each group is the input of a testcase. Each group consists of three lines:
 - The first line contains two numbers N and M ($1 \leq N, M \leq 10^5$);
 - The second line contains N numbers a_1, a_2, \dots, a_N .
 - The third line contains M numbers b_1, b_2, \dots, b_M .

Output

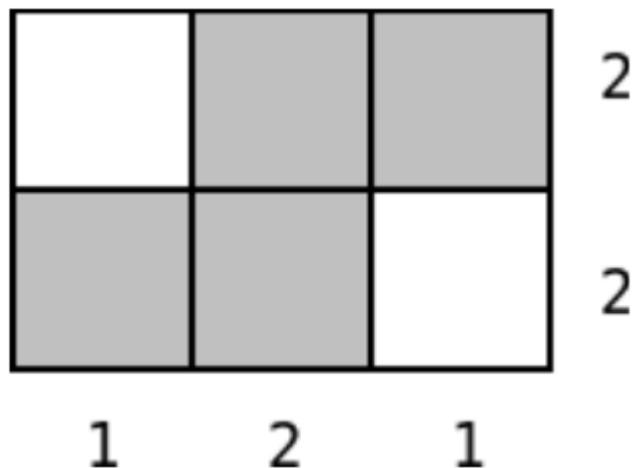
Consists of T lines, each line is the result of each testcase. If there is a way to paint the table, print 1; if not, print 0.

Example

Sample input	Sample output
2	1
3 2	0
1 2 1	
2 2	
4 5	
5 5 5 5	
0 0 0 0 0	

Explanation

This is a solution for the first testcase:



For the second testcase, no solution exists. According to the sequence a , we must paint all cells; nevertheless, according to the sequence b , we must not paint any cells.