

Problem D. Hanoi

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 256 mebibytes

Rikka has n disks of distinct sizes on three rods. Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack. No disk can be placed on top of a smaller disk.

Given the configuration of disks S and T , find the number of ways can Rikka transform from S to T in no more than m moves. As the number of ways can be very large, find it modulo 998 244 353.

Two sequences of moves are different if they have different lengths, or the configurations are different after some moves.

Input

The first line contains two integers n and m ($1 \leq n \leq 100, 0 \leq m \leq 100$).

The second line contains n integers a_1, a_2, \dots, a_n , the configuration S ($1 \leq a_i \leq 3$). These mean that the i -th smallest disk is on rod a_i .

The third line contains n integers b_1, b_2, \dots, b_n , the configuration T given in the same format ($1 \leq b_i \leq 3$).

Output

Print one integer: the number of ways modulo 998 244 353.

Examples

standard input	standard output
1 2 1 3	2
2 4 1 1 1 2	4
1 2 1 1	3
3 10 1 1 1 2 1 3	149