

11535 Set of Marbles

You have n marbles of different colors which are distributed in 2 boxes. In each move you can move one marble from one box into another. You have to move the marbles in such a way that first box contains each combination of marble sets exactly once. There are 2^n combinations of marbles.

For example you have 4 marbles. Box 1 has marbles of color 1 and 3. And Box 2 has marbles of color 2 and 4. Then the solution can be as follows.

Steps	Box 1 marbles	Move	Box 2 marbles
1	1,3		2,4
2	1,2,3	Move 2 from B2 to B1	4
3	1,2,3,4	Move 4 from B2 to B1	
4	1,2,4	Move 3 from B1 to B2	3
5	2,4	Move 1 from B1 to B2	1,3
6	2,3,4	Move 3 from B2 to B1	1
7	3,4	Move 2 from B1 to B2	1,2
8	4	Move 3 from B1 to B2	1,2,3
9		Move 4 from B1 to B2	1,2,3,4
10	3	Move 3 from B2 to B1	1,2,4
11	2,3	Move 2 from B2 to B1	1,4
12	2	Move 3 from B1 to B2	1,3,4
13	1,2	Move 1 from B2 to B1	3,4
14	1	Move 2 from B1 to B2	2,3,4
15	1,4	Move 4 from B2 to B1	2,3
16	1,3,4	Move 3 from B2 to B1	2

Input

Input contains multiple test cases. The first line of the input contains T ($1 \leq T \leq 20$) the number of test cases. Each test case consists of 2 lines. The first line contains n ($1 \leq n \leq 10$) and b_1 ($0 \leq b_1 \leq n$). n is the number of marbles and b_1 is the number of marbles in the first box. The next line contains b_1 integer the indices of the marbles which are in the first box. All of these numbers are distinct and between 1 and n inclusive. The rest of the $n - b_1$ marbles are in 2-nd box.

Output

For each test case output contains 2^n lines. The first $2^n - 1$ lines contains the moves (see the sample output for formatting). The last line is blank. In case there are multiple solutions any valid solution is acceptable.

Sample Input

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2
2 1
1
4 2
1 3
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Sample Output

Move 2 from B2 to B1
Move 1 from B1 to B2
Move 2 from B1 to B2

Move 2 from B2 to B1
Move 4 from B2 to B1
Move 3 from B1 to B2
Move 1 from B1 to B2
Move 3 from B2 to B1
Move 2 from B1 to B2
Move 3 from B1 to B2
Move 4 from B1 to B2
Move 3 from B2 to B1
Move 2 from B2 to B1
Move 3 from B1 to B2
Move 1 from B2 to B1
Move 2 from B1 to B2
Move 4 from B2 to B1
Move 3 from B2 to B1