Automated tile slab pickup machine

Input File: Problem2.txt

Hussain Tile Mill (HTM) produces high quality tile slabs Marble slab, Slate slab, Tumbled Slab, and Granite slab. The sizes of slabs maybe 1x1, 2x2, 3x3, 4x4, 5x5, 6x6, 7x7, 8x8, 9x9, and 10x10 units. During the slab production processes water is added. HTM needs an automated solution that collects completed slabs from assembly lines and sends to the drying section. At the assembly line, HTM system optimally cuts the tiles in different sizes for maximum utilization of raw material. At the end of the assembly line, tiles can reach in any order of size.

HTM has contacted FAST National University (FAST-NU) for an optimized automated solution. The mechanical department of FAST-NU has developed a top running overhead crane (girder) with a trolley which collects the complete slabs from an assembly line and ship to the drying section. The trolley can carry maximum *m* slabs and larger slab can't be placed on the smaller slab to avoid breakage. Now they need a computer software solution that optimally selects maximum slabs from the assembly line.

For example, if the slabs are produced at an assembly line with 10x10, 2x2, 8x8, 6x6, and 5x5 sizes (arriving in that order), you can collect the first two, but then you won't be able to get the other 8x8, 6x6, 5x5 slabs. Write down an efficient program to find the best number of slabs that can be shipped.

Input

The input consists of multiple test cases. The first line of input is the number of test cases N. Each of the following N lines contain the total slabs S at the end of assembly line followed by the capacity of the trolley *m*, and the list of different sizes of slabs in the arriving order.

Output

For each test case, print a single line that says "Case #*i*", where *i* is the test case number followed by the maximum slabs that can be transported from the assembly line to drying section. Follow the format of the output given below:

Sample Input
3
7 5 5 10 2 8 6 5
9 7 8 10 9 8 7 3 9 1
12 10 7 10 2 8 7 9 6 5 4 2 1

Sample Output
Case #1: 4 10 8 6 5
Case #2: 6 10 9 8 7 3 1
Case #3: 7 10 8 7 6 5 4 2