BaoBao is a big fan of the game and likes Sayori the most, so he decides to write a poem to please Sayori. A poem of m words $s_1, s_2, \ldots, s_m$ is nothing more than a sequence of m strings, and the happiness of Sayori after reading the poem is calculated by the formula where H is the happiness and $f(s_i)$ is Sayori's preference to the word s_i.

Given a list of n words and Sayori's preference to each word, please help BaoBao select m words from the list and finish the poem with these m words to maximize the happiness of Sayori.

Please note that each word can be used at most once!

Input

There are multiple test cases. The first line of input contains an integer T (about 100), indicating the number of test cases. For each test case:

The first line contains two integers n and m ($1 \leq m \leq n \leq 100$), indicating the number of words and the length of the poem.

For the following n lines, the i-th line contains a string consisting of lowercased English letters w_i ($1 \leq |w_i| \leq 15$) and an integer $f(w_i)$ ($-10^9 \leq f(w_i) \leq 10^9$), indicating the i-th word and Sayori's preference to this word. It's guaranteed that $w_i \neq w_j$ for all $i \neq j$.

Output

For each test case output one line containing an integer H and m strings $s_1, s_2, \ldots, s_m$ separated by one space, indicating the maximum possible happiness and the corresponding poem. If there are multiple poems which can achieve the maximum happiness, print the lexicographically smallest one.

Please, DO NOT output extra spaces at the end of each line, or your answer may be considered incorrect!

A sequence of m strings $a_1, a_2, \ldots, a_m$ is lexicographically smaller than another sequence of m strings $b_1, b_2, \ldots, b_m$, if there exists a k ($1 \leq k \leq m$) such that $a_i = b_i$ for all $1 \leq i < k$ and a_k is lexicographically smaller than b_k.

A string $s_1 = a_1 a_2 \ldots a_x$ is lexicographically smaller than another string $s_2 = b_1 b_2 \ldots b_y$, if there exists a k ($1 \leq k \leq \min(x, y)$) such that $a_i = b_i$ for all $1 \leq i < k$ and $a_k < b_k$, or $a_i = b_i$ for all $1 \leq i \leq \min(x, y)$ and $x < y$.

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