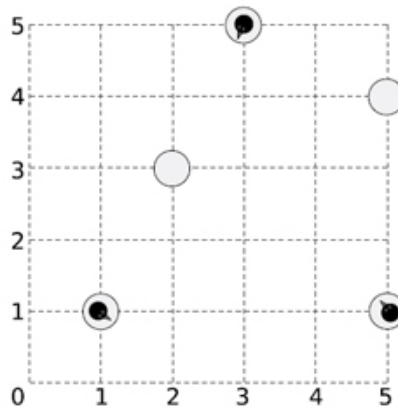


1154 - Penguins

Somewhere near the South Pole, a number of penguins are standing on a number of ice floes. Being social animals, the penguins would like to get together, all on the same floe. The penguins do not want to get wet, so they have use their limited jump distance to get together by jumping from piece to piece. However, temperatures have been high lately, and the floes are showing cracks, and they get damaged further by the force needed to jump to another floe. Fortunately the penguins are real experts on cracking ice floes, and know exactly how many times a penguin can jump off each floe before it disintegrates and disappears. Landing on an ice floe does not damage it. You have to help the penguins find all floes where they can meet.



A sample layout of ice floes with 3 penguins on them

Input

Input starts with an integer **T** (≤ 25), denoting the number of test cases.

Each case starts with the integer **N** ($1 \leq N \leq 100$) and a floating-point number **D** ($0 \leq D \leq 10^5$), denoting the number of ice pieces and the maximum distance a penguin can jump. After that there will be **N** lines, each line containing **x_i**, **y_i**, **n_i** and **m_i**, denoting for each ice piece its **X** and **Y** coordinate, the number of penguins on it and the maximum number of times a penguin can jump off this piece before it disappears ($-10000 \leq x_i, y_i \leq 10000$, $0 \leq n_i \leq 10$, $1 \leq m_i \leq 200$).

Output

For each case of input, print the case number and a space-separated list of 0-based indices of the pieces on which all penguins can meet. If no such piece exists, output **-1**.

Sample Input	Output for Sample Input
2 5 3.5 1 1 1 1 2 3 0 1 3 5 1 1 5 1 1 1 5 4 0 1 3 1.1 -1 0 5 10 0 0 3 9 2 0 1 1	Case 1: 1 2 4 Case 2: -1