

## Problem E. New Equipments

Input file: *standard input*  
Output file: *standard output*  
Time limit: 2 seconds  
Memory limit: 512 mebibytes

Little Q's factory recently purchased  $m$  pieces of new equipment, labeled by  $1, 2, \dots, m$ .

There are  $n$  workers in the factory, labeled by  $1, 2, \dots, n$ . Each worker can be assigned to no more than one piece of equipment, and no piece of equipment can be assigned to multiple workers. If Little Q assigns the  $i$ -th worker to the  $j$ -th piece of equipment, he will need to pay  $a_i \times j^2 + b_i \times j + c_i$  dollars.

Now please for every  $k$  ( $1 \leq k \leq n$ ) find  $k$  pairs of workers and pieces of equipment, then assign workers to these pieces of equipment, such that the total cost for these  $k$  workers is minimized.

### Input

The first line contains a single integer  $T$  ( $1 \leq T \leq 10$ ), the number of test cases. For each test case:

The first line contains two integers  $n$  and  $m$  ( $1 \leq n \leq 50$ ,  $n \leq m \leq 10^8$ ) denoting the number of workers and the number of pieces of equipment.

Each of the following  $n$  lines contains three integers  $a_i, b_i, c_i$  ( $1 \leq a_i \leq 10$ ,  $-10^8 \leq b_i \leq 10^8$ ,  $0 \leq c_i \leq 10^{16}$ ,  $b_i^2 \leq 4a_i c_i$ ) describing a worker.

### Output

For each test case, output a single line containing  $n$  integers, the  $k$ -th ( $1 \leq k \leq n$ ) of which is the minimum possible total cost for  $k$  pairs of workers and pieces of equipment.

### Example

standard input	standard output
1 3 5 2 3 10 2 -3 10 1 -1 4	4 15 37