

Very Special Boxes

Special Box Company (SBC) is a small family-owned and family-run business which produces decorated carton boxes for wrapping gifts. The boxes are hand-made, produced individually from fine materials. When accepting an order from a client, they always produce a few more boxes than needed, to keep a stock of boxes to be sold in the future, if needed. Over the years their stock has been growing, with boxes all over the place, and they decided they needed to organize it a bit more. They have therefore made a list registering the dimensions of every box in their stock.

SBC has just received an order from a client that must be delivered tomorrow, so there is no time to produce new boxes. The client wants a certain number N of boxes all of the same size; each box will be used to pack one item of dimensions X, Y and Z . As the carton used in the boxes is very thin, you may assume that a box of size (X, Y, Z) would fit perfectly the item the client wants to wrap. If there are not at least N boxes that fit perfectly, the client wants N boxes that fit the items as tightly as possible. The box size that fits the items as tightly as possible is the one which minimizes the empty space when the item is put inside the box. An item can be rotated in any direction to be accommodated inside a box; therefore, a box of size (X, Y, Z) is as good as a box of size (Y, Z, X) , for example.

Can you help SBC finding whether they can fulfil the customer order?

Input

The input consists of several test cases. The first line of a test case contains two integers N and M , indicating respectively the number of boxes the client needs to buy ($1 \leq N \leq 1500$) and the number of boxes in the stock list ($1 \leq M \leq 1500$). The second line contains three integers X, Y and Z , representing the dimensions of the item the client wants to wrap ($0 < X, Y, Z \leq 50$).

Each of the next M lines contains three integers A, B and C representing the dimensions of a box in the stock list ($0 < A, B, C \leq 50$). A test case with $N = 0$ indicates the end of the input.

The input must be read from standard input.

Output

For each test case in the input your program must produce one line, containing either:

-> The single word 'impossible', in case it is not possible to fulfill the client's order (because there are not at least N boxes of the same size in stock that can contain the item); or

-> one integer V , which specifies the volume of empty space left when one of the N items packed in one of the boxes chosen.

Example

Input:

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1 1
2 4 3
2 3 4
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2 6
3 1 3
7 4 7
10 8 2
2 8 10
6 2 9
7 7 4
6 2 9
1 1
3 3 3
1 1 1
0 0

Output:

0
99
impossible