Problem G. Pandaland

Time limit: 3 seconds

Mr. Panda lives in Pandaland. There are many cities in Pandaland. Each city can be treated as a point on a 2D plane. Different cities are located in different locations.

There are also M bidirectional roads connecting those cities. There is no intersection between two distinct roads except their endpoints. Besides, each road has a cost w.

One day, Mr. Panda wants to find a simple cycle with minmal cost in the Pandaland. To clarify, a simple cycle is a path which starts and ends on the same city and visits each road at most once. The cost of a cycle is the sum of the costs of all the roads it contains.

Input

The first line of the input gives the number of test cases, T. T test cases follow.

Each test case begins with an integer M.

Following M lines discribes roads in Pandaland.

Each line has 5 integers x_1, y_1, x_2, y_2, w, representing there is a road with cost w connecting the cities on (x_1, y_1) and (x_2, y_2).

Output

For each test case, output one line containing `Case #x: y`, where `x` is the test case number (starting from `1`) and `y` is the cost Mr. Panda wants to know.

If there is no cycles in the map, `y` is `0`.

Limits

- $1 \leq T \leq 50$.
- $1 \leq m \leq 4000$.
- $-10000 \leq x_i, y_i \leq 10000$.
- $1 \leq w \leq 10^5$.

Sample input and output

Sample Input	Sample Output
2 5 0 0 0 1 2 0 0 1 0 2 0 1 1 1 2 1 0 1 1 2 1 0 0 1 5 9 1 1 3 1 1 1 1 1 3 2 3 1 3 3 2 1 3 3 3 1 1 1 2 2 2 2 2 3 3 3 3 1 2 2 1 2 2 1 3 2 4 1 5 1 4	Case #1: 8 Case #2: 4