Bridges

A new planet full of rivers was discovered and is being prepared for colonization. We want to connect every piece of land by bridges, the cost of building a bridge is its width.

Input

The first number in the input file is T < 200, the number of test cases. Each test case starts with a line with a integer, N <= 500, the number of rivers. N lines are followed with 5 integers each, $Di1$, $Fi1$, $Di2$, $Fi2$ and Wi <= 1000000, the coordinates of the extremities and the width of the i-th river. Every D is between -90 and 90, and every F is between 0 and 359, they are measured in degrees and correspond to the spherical coordinates (latitude and longitude respectively).
The two extremities of a river can be seen from above in a distance less than infinite, a course of a river is always the smallest possible and two rivers intersect in at most 1 point.

Output

For each test case print a single line with "Case #X: C" where X is the number of the test case (starting from 1) and C is the minimum cost to build the bridges so the islands and continents are connected directly or indirectly to each other.

Example

Input:

```
3
4
0 0 90 0 4
90 0 0 179 2
0 0 -90 0 1
-90 0 0 179 1
6
0 0 10 90 3
0 0 -20 90 3
0 179 10 90 5
0 179 -20 90 1
0 0 0 179 10
-20 90 20 90 1
1
0 2 0 3 1
```

Output:

```
Case #1: 1
Case #2: 6
Case #3: 0
```