

Round Fence

Lea is fond of wildlife. She wants to protect the nests of the rare endemic wild birds whose natural habitat is under threat from the hunger of the common domestic least-conservation-concerns cats. Her plan includes building a cat-proof round fence enclosing all the trees with the birds' nests. Of course, protecting the wildlife is urgent, so the fence should be built as soon as possible — and the shorter it is, the faster it is to build!

Compute the minimum possible radius of a round fence sufficient for Lea's environmental goals.

Input

The first line of the input contains an integer t . t test cases follow, each of them separated by a blank line.

Each test case starts with a line containing one integer N . N lines follow, each containing three integers x_i , y_i , and r_i , representing the coordinates (x_i, y_i) and the radius r_i of the i -th tree.

Output

For each test case output a line containing “Case # i : r “, where r is the minimum radius of the fence enclosing all the trees. The radius should have the absolute error at most 10^{-3} .

Constraints

- $1 \leq t \leq 20$
- $1 \leq N \leq 1000$
- $1 \leq |x_i|, |y_i|, r_i \leq 10^6$

Trees can overlap.

Sample Input 1

```
1
5
10 11 4
10 -12 3
23 0 2
-4 0 1
10 0 2
```

Sample Output 1

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Case #1: 15
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