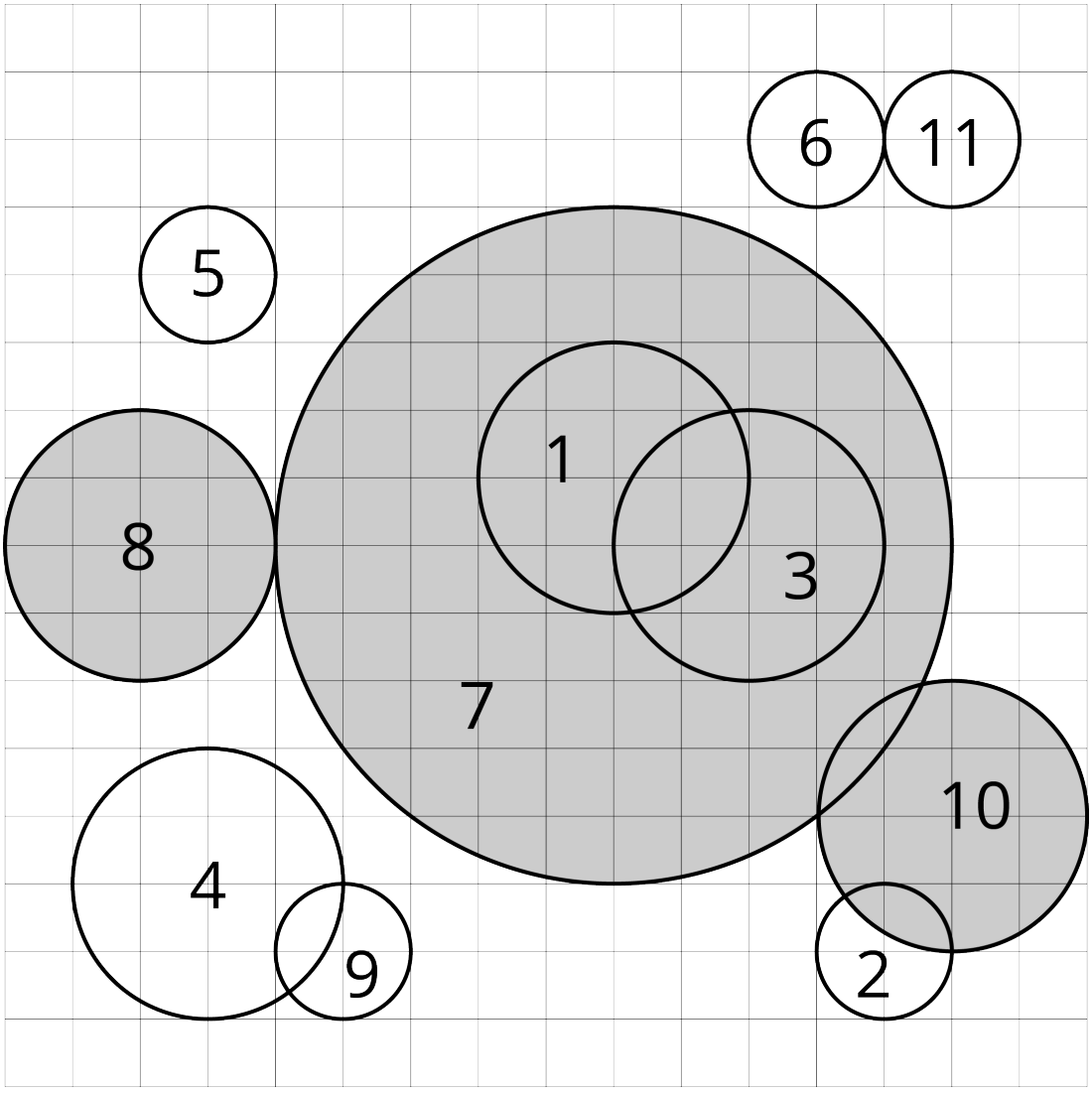
Problem B. Circle selection

Time limit:	3 seconds
Memory limit:	1024 megabytes

Given n circles $c_1, c_2, \ldots, c_n$ on a flat Cartesian plane. We attempt to do the following:

1. Find the circle c_i with the largest radius. If there are multiple candidates all having the same (largest) radius, choose the one with the smallest index. (i.e. minimize i).
2. Remove c_i and all the circles intersecting with c_i. Two circles intersect if there exists a point included by both circles. A point is included by a circle if it is located in the circle or on the border of the circle.
3. Repeat 1 and 2 until there is no circle left.



We say c_i is eliminated by c_j if c_j is the chosen circle in the iteration where c_i is removed. For each circle, find out the circle by which it is eliminated.

Input

The first line contains an integer n, denoting the number of circles ($1 \le n \le 3 \cdot 10^5$). Each of the next n lines contains three integers x_i, y_i, r_i, representing the x-coordinate, the y-coordinate, and the radius of the circle c_i ($-10^9 \le x_i, y_i \le 10^9$, $1 \le r_i \le 10^9$).

Output

Output n integers $a_1, a_2, \ldots, a_n$ in the first line, where a_i means that c_i is eliminated by c_{a_i}.

Scoring

Subtask 1 (points: 7)

$n \leq 5000$

Subtask 2 (points: 12)

$n \leq 3 \cdot 10^5$, $y_i = 0$ for all circles

Subtask 3 (points: 15)

$n \leq 3 \cdot 10^5$, every circle intersects with at most 1 other circle

Subtask 4 (points: 23)

$n \leq 3 \cdot 10^5$, all circles have the same radius.

Subtask 5 (points: 30)

$n \leq 10^5$

Subtask 6 (points: 13)

$n \leq 3 \cdot 10^5$

Example

input	output
11 9 9 2 13 2 1 11 8 2 3 3 2 3 12 1 12 14 1 9 8 5 2 8 2 5 2 1 14 4 2 14 14 1	7 2 7 4 5 6 7 7 4 7 6

Note

The picture in the statements illustrates the first example.