Minimum Bounding Rectangle

Compute the Minimum Bounding Rectangle (MBR) that surrounds the given set of 2D objects, i.e., the axis-aligned rectangle, which contains all of the specified objects and is the one with minimum area among all rectangles with this property.

Input

First, you are given t (t<100) - the number of test cases.

Each of the test cases starts with one integer n ($n < 100$) - the number of objects in the set. In the successive n lines, the descriptions of the objects follow.

Each object is described by one character and some parameters:

- a point: p x y, where x and y are point coordinates.
- a circle: c x y r, where x and y are the center coordinates and r is the radius of the circle.
- a line segment: l x_1 y_1 x_2 y_2, where x_i, y_i are the coordinates of the endpoints of the line.

Successive test cases are separated by an empty line.

Output

For each of the test cases output four numbers - the coordinates of the two points that correspond to the lower left and the upper right corner of the MBR, in the following order: first the x-coordinate of the lower left corner, then the y-coordinate of the lower left corner, the x-coordinate of the upper right corner and the y-coordinate of upper right corner.

You can assume that all object parameters are integers and that -1000 -1000 1000 1000 is a bounding rectangle for all of them.

Example

Input:
```
3
1
p 3 3

2
c 10 10 20
c 20 20 10

1
l 0 0 100 20
```

Output:
```
3 3 3 3
-10 -10 30 30
0 0 100 20
```

Test case description

test 1: points only   (2 pts)
test 2: circles only   (2 pts)
test 3: lines only   (2 pts)
test 4: mixed   (2 pts)
test 5: mixed   (2 pts)