

Problem C. Integer Cow

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 512 mebibytes

A cow stands on an infinite plane in integer point (x_0, y_0) . Grass grows in a disk centered in integer point (x_c, y_c) with integer radius r , and also on the disk border.

The cow can perform the following command an arbitrary number of times: move from its current integer point (x_1, y_1) to integer point (x_2, y_2) . The time to perform such command is equal to the Euclidean distance between the points. The two points may coincide.

Find a sequence of commands which will bring the cow to an integer point with grass in minimum possible time.

Input

The first line contains an integer t , the number of test cases ($1 \leq t \leq 100$). The next t lines contain test cases, one per line. Each test case is defined by five integers x_c, y_c, r, x_0, y_0 : the coordinates of the grass disk's center, its radius, and the initial coordinates of the cow ($-10^9 \leq x_c, y_c, x_0, y_0 \leq 10^9, 1 \leq r \leq 10^9$).

Output

For each test case, print two lines. On the first one, print an integer k , the number of commands ($0 \leq k \leq 1\,000\,000$). On the second line, print $2(k + 1)$ integers, the cow's path: $x_0 y_0 \dots x_k y_k$. If there are several optimal sequences, print any one of them.

Example

standard input	standard output
3	0
1 2 1 1 2	1 2
3 2 5 -10 3	1
0 0 1 10 0	-10 3 -2 2
	3
	10 0 5 0 5 0 1 0

Explanation

The picture corresponds to the second test

