Black Sabbath

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

Consider a two-dimensional rectangular pie of size $w \times h$. Let's introduce a coordinate system such that corners of the pie are points $(0, 0)$, $(w, 0)$, (w, h), and $(0, h)$. The pie contains n cherries. Each cherry is represented by a circle of radius r_i lying strictly inside the pie. No two cherries overlap or touch each other or the border of the pie.

You invited $n - 1$ guests to a party, so there are n people including you. Now it's time to cut the pie and eat it! A person is satisfied if he or she gets a strictly convex polygonal piece of the pie containing a cherry strictly inside. The size and form of the piece don't matter, as well as the size of the cherry. A polygon is called strictly convex if, for each two points a and b inside it, it also contains the whole segment $[a, b]$ between those two points, and additionally, no three vertices of the polygon lie on a same line.

You spent lots of hours cooking this beautiful pie, so you don't want to leave any unused pieces of that wonderful dish. So, you want to cut the pie into exactly n pieces according to the rules above without leaving any extra pieces. Your task is to find any such cutting.

Input

The first line of input contains three integers w, h and n ($4 \le w, h \le 10^4$, $1 \le n \le 1000$), the size of the pie and the number of cherries.

The following n lines contain triples of integers x_i, y_i, r_i ($1 \le r_i \le \frac{\min\{w,h\}}{2} - 1$, $r_i + 1 \le x_i \le w - r_i - 1$, $r_i + 1 \le y_i \le h - r_i - 1$), the coordinates of the center of i-th cherry and its radius.

It is guaranteed that the distance between any two distinct cherries is at least 0.1.

Output

Output descriptions of n pieces containing each cherry in the order they follow in the input. Each description must start with an integer k ($k \ge 3$), the number of sides of a strictly convex polygon that forms the corresponding piece. After that, output k lines containing coordinates of polygon's vertices in counter-clockwise order.

It is recommended to output all floating-point numbers with no less than 9 digits after the decimal point. The checking program will perform at least the following checks using 80-bit floating-point arithmetic:

- Each side of each piece must have length at least 10^{-4}.
- The internal angle between any two consecutive sides of any piece must be no larger than $\pi - 10^{-11}$ radians. The vertices of each piece must be given in counter-clockwise order.
- The total area of all pieces must be in the range $[(1 - 10^{-9}) \cdot w \cdot h, (1 + 10^{-9}) \cdot w \cdot h]$.
- The distance between each point of a cherry and the border of the piece containing that cherry must be at least 10^{-4}.
- A point of one piece can belong to another piece as well, but in such case, the distance from this point to the border of the second piece can be at most 10^{-4}.
- A point of a piece can lie outside the pie, but in such case, the distance from this point to the border of the pie can be at most 10^{-4}.
- The total number of sides of all pieces can be at most $2 \cdot 10^4$.

As you can see, writing a checking program can also be a hard technical problem for a programming contest.

Example

standard input	standard output
12 10 5 3 2 1 9 2 1 6 5 2 3 8 1 9 8 1	5 0.0 0.0 6.0 0.0 6.0 1.0 1.5 5.0 0.0 5.0 5 6.0 0.0 12.0 0.0 12.0 5.0 10.5 5.0 6.0 1.0 4 6.0 1.0 10.5 5.0 6.0 9.0 1.5 5.0 5 0.0 5.0 1.5 5.0 6.0 9.0 6.0 10.0 0.0 10.0 5 12.0 10.0 6.0 10.0 6.0 9.0 10.5 5.0 12.0 5.0

Note

If you eventually solve all problems of the contest and you feel lonely and bored, ask the authors to give you a version of this task with $n \leq 10^5$:) .