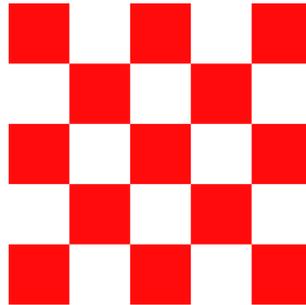


ALIENS

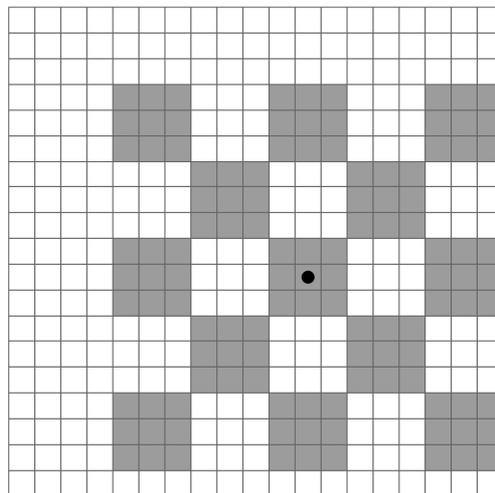
Mirko is a big fan of crop circles, geometrical formations of flattened crops that are supposedly of alien origin. One summer night he decided to make his own formation on his grandmother's meadow. The great patriot that he is, Mirko decided to make a crop formation that would have the shape of the shield part of the Croatian coat of arms, which is a 5×5 chessboard with 13 red squares and 12 white squares.



The chessboard part of the Croatian coat of arms.

Grandma's meadow is a square divided into $N \times N$ cells. The cell in the lower left corner of the meadow is represented by the coordinates $(1, 1)$ and the cell in the upper right corner is represented by (N, N) .

Mirko decided to flatten only the grass belonging to red squares in the chessboard, leaving the rest of the grass intact. He picked an **odd integer** $M \geq 3$ and flattened the grass so that each square of the chessboard comprises $M \times M$ cells in the meadow, and the chessboard completely fits inside the meadow.



Example meadow and Mirko's crop formation, with $N=19$ and $M=3$.
 Cells with flattened grass are shown in gray.
 The center of the formation is at $(12, 9)$ and is marked with a black point.



After Mirko went to sleep, his peculiar creation drew the attention of real aliens! They are floating high above the meadow in their spaceship and examining Mirko's crop formation with a simple device. This device can only **determine whether the grass in a particular cell is flattened or not.**

The aliens have found **one cell with flattened grass** and now they want to find the **center cell** of Mirko's masterpiece, so that they may marvel at its beauty. They **do not know the size M** of each square in Mirko's formation.

TASK

Write a program that, given the size N ($15 \leq N \leq 2\,000\,000\,000$) of the meadow, the coordinates (X_0, Y_0) of one cell with flattened grass, and the ability to interact with the alien device, finds the coordinates of the center cell of Mirko's crop formation.

The device may be used at most 300 times in one test run.

INTERACTION

This is an interactive task. Your program sends commands to the alien device using the standard output, and receives feedback from the device by reading from the standard input.

- At the beginning of your program, you should read three integers N , X_0 and Y_0 from the standard input, separated by single spaces. The number N is the size of the meadow, while (X_0, Y_0) are the coordinates of one cell with flattened grass.
- To examine the grass in the cell (X, Y) using the alien device, you should output a line of the form "examine x y " to the standard output. If the coordinates (X, Y) are not inside the meadow (the conditions $1 \leq X \leq N$ and $1 \leq Y \leq N$ are not satisfied), or if you use this facility more than 300 times, your program will receive a score of zero on that test run.
- The alien device will respond with a single line containing the word "true" if the grass in cell (X, Y) is flattened and the word "false" otherwise.
- When your program has found the center cell, it should output a line of the form "solution x_c y_c " to the standard output, where (X_c, Y_c) are the coordinates of the center cell. The execution of your program will be automatically terminated once your program outputs a solution.

In order to interact properly with the grader, your program needs to **flush the standard output** after every write operation; the provided code samples show how to do this.

CODE SAMPLES

Code samples in all three programming languages are available for download on the "Tasks" page of the contest system. The purpose of the samples is only to show how to interact with the alien device; these are not the correct solutions and will not score all points.

GRADING

In test cases worth a total of 40 points, the size M of each of Mirko's squares will be at most 100.

Each test run will have a unique correct answer that will not depend on the questions asked by your program.

EXAMPLE

In the following example, commands are given in the left column, row by row. Feedback from the alien device is given in the second column of the corresponding row.

output (command)	input (feedback)
	19 7 4
examine 11 2	true
examine 2 5	false
examine 9 14	false
examine 18 3	true
solution 12 9	

TESTING

During the contest, there are three ways to test your solutions.

The first way is for you to simulate the alien device manually and interact with your program.

The second way is to write a program which will simulate the alien device. To connect your solution and the device you wrote, you may use a utility called "connect", available for download on the contest system. To use the utility issue a command such as `./connect ./solution ./device` from the console (substituting "solution" and "device" with the names of your two programs). Any additional command-line parameters will be passed on to the device program.

The third way is to use the TEST facility of the grading system to automatically run your solution with a custom test case. When using the facility, the size of the meadow N is limited to 100.

A test case should contain three lines:

- The first line contains the size N of the meadow and the size M of a square in the chessboard;
- The second line contains the coordinates X_0 and Y_0 of one cell of the meadow with flattened grass, which will be given to your program;
- The third line contains the coordinates X_C and Y_C of the center cell of the chessboard.

The grading system will provide you with a detailed log of the execution, including error messages if:

- N doesn't satisfy the constraints;
- M is not an odd integer greater than or equal to 3;
- The crop formation doesn't fit in the meadow;
- The grass in cell (X_0, Y_0) is not flattened.

Here is an example of a valid input file for the test facility. The example corresponds to the figure on the first page.

```
19 3
7 4
12 9
```

Valid input for the test facility.