## C++ Advanced - Exam (3 July 2021)

For this exam, the code for each task should be a single C++ file, the contents of which you copy-paste into the Judge system.

Please be mindful of the strict input and output requirements for each task, as well as any additional requirements on running time, used memory, etc., as the tasks are evaluated automatically and not following the requirements strictly may result in your program's output being evaluated as incorrect, even if the program's logic is mostly correct.

You can use C++03 and C++11 features in your code.

### 2. Ranges

A range is a pair of integer numbers – let's say that from and to form the range [from, to].

If an integer number x is such that from  $\leq x \leq t_0$ , then we say that x is inside the range [from, to], or that the range [from, to] contains x.

You are given a set of ranges, in which no two ranges intersect. That means that no range contains the **from** or **to** of another range.

You are also given a sequence of integer numbers – let's call them **check numbers**.

For each of the check numbers, print "in" if the number is inside any range, and "out" otherwise (i.e. if no range contains the number).

NOTE: there will be a large number of ranges and an even larger number of integer numbers.

#### Input

The input will be separated into two parts.

The first part will contain the ranges, each described as two integer numbers on a separate line of the standard input (the **from** and **to** of the range), until a line containing only the symbol '.' (dot) is reached.

After that, each line of the standard input will contain exactly one check number, until a line containing only the symbol '.' (dot) is reached.

#### Output

For each check number in the input, print "in" if that number is contained in any range, or "out" if no range contains that number.

#### Restrictions

There will be between 1 and 10000 ranges (inclusive).

There will be between 1 and 100000 check numbers (inclusive).

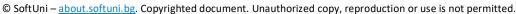
For every range, **from <= to**.

In 30% of the tests, there will be no more than 10 ranges and 10 numbers.

The total running time of your program should be no more than 0.4s

The total memory allowed for use by your program is 8MB



















# Example I/O

Example Input	Expected Output
1 3	out
5 10	in
20 20	in
	out
0	in
2	in
3	out
4	in
5	
7	
19	
20	
•	
-5 0	out
1 3	out
	in
-10000	out
-1000	
0	
10	













