# 02. Memory Management – Homework Exercises

Write C++ code for solving the tasks on the following pages.

Code should compile under the C++03 or the C++11 standard.

Submit your solutions here: <https://judge.softuni.bg/Contests/1153/03-Exercises-on-Pointers-References-and-Dynamic-Memory> (select “Compete” when prompted)

Any code files that are part of the task are provided under the folder **Skeleton**.

Please follow the exact instructions on uploading the solutions for each task.

# Task 4 – 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 <= x <= to, then we say that x is **inside** the range [from, to]**,** or that the range[from, to]containsx.

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  5 10  20 20  .  0  2  3  4  5  7  19  20  . | out  in  in  out  in  in  out  in |
| -5 0  1 3  .  -10000  -1000  0  10  . | out  out  in  out |

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