Problem F
Worst Weather Ever

source: `weather.c` *or* `weather.cpp` *or* `weather.java`

"Man, this year has the worst weather ever!", David said as he sat crouched in the small cave where we had sought shelter from yet another sudden rainstorm.

"Nuh-uh!", Diana immediately replied in her traditional know-it-all manner.

"Is too!", David countered cunningly. Terrific. Not only were we stuck in this cave, now we would have to listen to those two nagging for at least an hour. It was time to cut this discussion short.

"Big nuh-uh. In fact, 93 years ago it had already rained five times as much by this time of year."

"Duh", David capitulated, "so it's the worst weather in 93 years then."

"Nuh-uh, this is actually the worst weather in 23 years.", Diana again broke in.

"Yeah, well, whatever", David sighed, "Who cares anyway?".

Well, dear contestants, you care, don't you?

Description

Your task is to, given information about the amount of rain during different years in the history of the universe, and a series of statements in the form "`Year X had the most rain since year Y`", determine whether these are true, might be true, or are false. We say that such a statement is true if:

- The amount of rain during these two years and all years between them is known.

- It rained at most as much during year `X` as it did during year `Y`.

- For every year Z satisfying $Y < Z < X$, the amount of rain during year Z was less than the amount of rain during year `X`.

We say that such a statement might be true if there is an assignment of amounts of rain to years for which there is no information, such that the statement becomes true. We say that the statement is false otherwise.

Input

The input will consist of several test cases, each consisting of two parts.

The first part begins with an integer $1 \leq n \leq 50000$, indicating the number of different years for which there is information. Next follow n lines. The i-th of these contains two integers $-10^9 \leq y_i \leq 10^9$ and $1 \leq r_i \leq 10^9$ indicating that there was r_i millilitres of rain during year y_i (note that the amount of rain during a year can be any nonnegative integer, the limitation on r_i is just a limitation on the input). You may assume that $y_i < y_{i+1}$ for $1 \leq i < n$.

The second part of a test case starts with an integer $1 \leq m \leq 10000$, indicating the number of queries to process. The following m lines each contain two integers $-10^9 \leq Y < X \leq 10^9$ indicating two years.

There is a blank line between test cases. The input is terminated by a case where $n = 0$ and $m = 0$. This case should not be processed.

Technical note: Due to the size of the input, the use of `cin`/`cout` in C++ might be too slow in this problem. Use `scanf`/`printf` instead. In Java, make sure that both input and output is buffered.

Output

There should be m lines of output for each test case, corresponding to the m queries. Queries should be answered with "**true**" if the statement is true, "**maybe**" if the statement might be true, and "**false**" if the statement is false.

Separate the output of two different test cases by a blank line.

Sample

Input	Output
4	false
2002 4920	true
2003 5901	
2004 2832	maybe
2005 3890	maybe
2	
2002 2005	
2003 2005	
3	
1985 5782	
1995 3048	
2005 4890	
2	
1985 2005	
2005 2015	
0	
0	