1 Introduction

You have just landed a gig as the lead data analyst for Dissonance, the hottest messaging app on the planet, after 10 rounds of interviews and 4 billion LeetCode challenges. After arriving at the office on your first day of work, you open Jira to be greeted with your very first user story: your supervisor wants to gather data on how many unique users were active in Dissonance during specific time intervals. This information is crucial to adjusting the company's global marketing strategies. At the bottom of the card, your supervisors stress that you must process these queries as rapidly as possible. In other words, efficiency is key!

2 Description

Write a program that, given a list of user message timestamps, outputs the number of distinct users who have sent a message within various time ranges.

3 Input

The first line of input will contain the number of messages $M < 5 \cdot 10^5$ and the number of queries $Q < 10^4$. The following M lines of input contain an integer representing the message timestamp and the username (which for convenience is guaranteed to be a single token) of the message's sender. Note that these are in no guaranteed order. Also note that timestamps can be large integers. The following Q lines of input represent queries and contain two integers, the first representing the beginning timestamp for the query and the second representing the end timestamp.

4 Output

For each query, output the number of distinct users who sent a message within its timespan on a new line. The timestamp bounds of the query are both inclusive.

5 Sample Case

Input	Output
6 5	2
1 Sebastian	3
2 Cole	3
3 Sebastian	2
4 Keshav	0
5 Cole	
70 Cole	
1 3	
3 5	
1 5	
4 10	
6 7	