

HOME TOP CONTESTS GYM PROBLEMSET GROUPS RATING API HELP CALENDAR

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

D. Frets On Fire

time limit per test: 1.5 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Miyako came to the flea kingdom with a ukulele. She became good friends with local flea residents and played beautiful music for them every day.

In return, the fleas made a bigger ukulele for her: it has n strings, and each string has $(10^{18} + 1)$ frets numerated from 0 to 10^{18} . The fleas use the array s_1, s_2, \dots, s_n to describe the ukulele's tuning, that is, the *pitch* of the j -th fret on the i -th string is the integer $s_i + j$.

Miyako is about to leave the kingdom, but the fleas hope that Miyako will answer some last questions for them.

Each question is in the form of: "How many different pitches are there, if we consider frets between l and r (inclusive) on all strings?"

Miyako is about to visit the cricket kingdom and has no time to answer all the questions. Please help her with this task!

Formally, you are given a matrix with n rows and $(10^{18} + 1)$ columns, where the cell in the i -th row and j -th column ($0 \leq j \leq 10^{18}$) contains the integer $s_i + j$. You are to answer q queries, in the k -th query you have to answer the number of distinct integers in the matrix from the l_k -th to the r_k -th columns, inclusive.

Input

The first line contains an integer n ($1 \leq n \leq 100\,000$) — the number of strings.

The second line contains n integers s_1, s_2, \dots, s_n ($0 \leq s_i \leq 10^{18}$) — the tuning of the ukulele.

The third line contains an integer q ($1 \leq q \leq 100\,000$) — the number of questions.

The k -th among the following q lines contains two integers l_k, r_k ($0 \leq l_k \leq r_k \leq 10^{18}$) — a question from the fleas.

Output

Output one number for each question, separated by spaces — the number of different pitches.

Examples

input	Copy
6 3 1 4 1 5 9 3 7 7 0 2 8 17	
output	Copy
5 10 18	

input	Copy
2 1 500000000000000000 2 1000000000000000000 1000000000000000000 0 1000000000000000000	
output	Copy
2 1500000000000000000	

Codeforces Global Round 2

Finished

Practice

★

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: 选择文件 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Problem tags

binary search sortings *1700

No tag edit access

→ Contest materials

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Announcement #2 (ru) ×

Tutorial #1 (en) ×

Tutorial #2 (ru) ×

codeforces.com/contest/1119/problem/D

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Note

For the first example, the pitches on the 6 strings are as follows.

Fret	0	1	2	3	4	5	6	7	...
s_1 :	3	4	5	6	7	8	9	10	...
s_2 :	1	2	3	4	5	6	7	8	...
s_3 :	4	5	6	7	8	9	10	11	...
s_4 :	1	2	3	4	5	6	7	8	...
s_5 :	5	6	7	8	9	10	11	12	...
s_6 :	9	10	11	12	13	14	15	16	...

There are 5 different pitches on fret 7 — 8, 10, 11, 12, 16.

There are 10 different pitches on frets 0, 1, 2 — 1, 2, 3, 4, 5, 6, 7, 9, 10, 11.

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