Problem I. Intrinsic Interval

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	512 mebibytes

Given a permutation π of integers 1 through n, an *interval* in π is a consecutive subsequence consisting of consecutive numbers. More precisely, for indices a and b where $1 \le a \le b \le n$, the subsequence $\pi_a^b = (\pi_a, \pi_{a+1}, \ldots, \pi_b)$ is an interval if sorting it would yield a sequence of consecutive integers. For example, in permutation $\pi = (3, 1, 7, 5, 6, 4, 2)$, the subsequence π_3^6 is an interval (it contains the numbers 4 through 7) while π_1^3 is not.

For a subsequence π_x^y its *intrinsic interval* is any interval π_a^b that contains the given subsequence ($a \le x \le y \le b$) and that is, additionally, as short as possible. Of course, the *length* of an interval is defined as the number of elements it contains.

Given a permutation π and m of its subsequences, find some intrinsic interval for each subsequence.

Input

The first line contains an integer n ($1 \le n \le 100\,000$) — the size of the permutation π. The following line contains n different integers $\pi_1, \pi_2, \ldots, \pi_n$ ($1 \le \pi_j \le n$) — the permutation itself.

The following line contains an integer m ($1 \le m \le 100\,000$) — the number of subsequences. The j-th of the following m lines contains integers x_j and y_j ($1 \le x_j \le y_j \le n$) — the endpoints of the j-th subsequence.

Output

Output m lines. The j-th line should contain two integers a_j and b_j where $1 \le a_j \le b_j \le n$ — the endpoints of some intrinsic interval of the j-th subsequence $\pi_{x_j}^{y_j}$.

Example

standard input	standard output
7 3 1 7 5 6 4 2 3 3 6 7 7 1 3	3 6 7 7 1 7
10 2 1 4 3 5 6 7 10 8 9 5 2 3 3 7 4 7 4 8 7 8	1 4 3 7 3 7 3 10 7 10