PROBLEM K

KILLER PROBLEM

You are given an array of *N* integers and *Q* queries. Each query is a closed interval [l, r]. You should find the minimum absolute difference between all pairs in that interval.

Input (Standard Input)

First line contains an integer *T* (T ≤ 10). T sets follow. Each set begins with an integer N (N ≤ 200000). In the next line there are N integers a_i ($1 \leq a_i \leq 10^4$), the number in the iᵗʰ cell of the array. Next line will contain Q (Q ≤ 10^4). Q lines follow, each containing two integers l_i, r_i ($1 \leq l_i$, $r_i \leq N$, $l_i < r_i$) describing the beginning and ending of of iᵗʰ range. Total number of queries will be less than 15000.

Output (Standard Output)

For the iᵗʰ query of each test output the minimum $|a_j - a_k|$ for $l_i \leq j$, $k \leq r_i$ ($j \neq k$) a single line.

Sample Input and Output

Sample Input	Sample Output
1	0
10	1
1 2 4 7 11 10 8 5 1 10000	3
4	4
1 10	
1 2	
3 5	
8 10	