UVa Online Judge

11898 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

First line contains an integer T ($T \leq 10$). T sets follow. Each set begins with an integer N ($N \leq 200000$). In the next line there are N integers a_i ($1 \leq a_i \leq 10^4$), the number in the i-th cell of the array. Next line will contain Q ($Q \leq 10^4$). 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 i-th range. Total number of queries will be less than 15000.

Output

For the i-th 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

```
1
10
1 2 4 7 11 10 8 5 1 10000
4
1 10
1 2
3 5
8 10
```

Sample Output

```
0
1
3
4
```