Problem D: Median

Time limit: 1s; Memory limit: 256 MB

There is an array a with n integers a[1], a[2], …, a[n] where a[i] $\leq 10^5$. You are given q queries each of which contain two integers l and r where $l \leq r$ and you have to find the median value of the subarray in the range $[l, r]$. The median value of an array with n integers is the value at the position $\lfloor (n + 1)/2 \rfloor$ after the array is sorted ascendingly.

Input

The first line contains two integers n and q ($n \leq 10^5$ and $q \leq 10^5$) – the length of the array and the number of queries

The second line contains the array a, a[1], a[2],…, a[n] (a[i] $\leq 10^5$)

The next q lines contain the queries. Each of the lines has two integers l and r ($0 \leq l \leq r \leq n$) – represent the subarray

Output

For each query, print the median value of the given subarray.

Sample

Input	Output
8 5 2 8 4 16 5 2 10 6 1 3 2 5 6 8 5 8 1 8	4 5 6 5 5