

C. Median Splits

time limit per test: 2 seconds

memory limit per test: 256 megabytes

The median of an array b_1, b_2, \dots, b_m , written as $\text{med}(b_1, b_2, \dots, b_m)$, is the $\lceil \frac{m}{2} \rceil$ -th* smallest element of array b .

You are given an array of integers a_1, a_2, \dots, a_n and an integer k . You need to determine whether there exists a pair of indices $1 \leq l < r < n$ such that:

$$\text{med}(\text{med}(a_1, a_2, \dots, a_l), \text{med}(a_{l+1}, a_{l+2}, \dots, a_r), \text{med}(a_{r+1}, a_{r+2}, \dots, a_n)) \leq k.$$

In other words, determine whether it is possible to split the array into three contiguous subarrays† such that the median of the three subarray medians is less than or equal to k .

* $\lceil x \rceil$ is the ceiling function which returns the least integer greater than or equal to x .

† An array x is a subarray of an array y if x can be obtained from y by the deletion of several (possibly, zero or all) elements from the beginning and several (possibly, zero or all) elements from the end.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \leq t \leq 10^4$). The description of the test cases follows.

The first line of each test case contains two integers n and k ($3 \leq n \leq 2 \cdot 10^5$, $1 \leq k \leq 10^9$) — the length of the array a and the constant k .

The second line of each test case contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^9$) — the elements of the array a .

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each testcase, output "YES" if such a split exists, and "NO" otherwise.

You can output the answer in any case (upper or lower). For example, the strings "yEs", "yes", "Yes", and "YES" will be recognized as positive responses.

Example

input	Copy
6	
3 2	
3 2 1	
3 1	
3 2 1	
6 3	
8 5 3 1 6 4	
8 7	
10 7 12 16 3 15 6 11	
6 8	
7 11 12 4 9 17	
3 500000000	
1000 1000000000 1000	
output	Copy
YES	
NO	
NO	
YES	
YES	
YES	

Note

In the first and second test case, the only possible partition of the array into three contiguous subarrays is $[3]$, $[2]$, $[1]$. Their respective medians are 3, 2, and 1. The median of the three subarray medians is $\text{med}(3, 2, 1) = 2$. Therefore, the answer for the first test case is "YES" since $2 \leq 2$, while the answer for the second test case is "NO" since $2 > 1$.

Codeforces Round 1019 (Div. 2)

Finished

Practice



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 Language: [GNU G++23 14.2 \(64 bit, ms\)](#)

 Choose file: [Choose File](#) No file chosen

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Submission	Time	Verdict
316634731	Apr/22/2025 07:59	Accepted
316576362	Apr/21/2025 18:58	Time limit exceeded on pretest 6
316573995	Apr/21/2025 18:53	Time limit exceeded on pretest 6

→ Problem tags

[dp](#) [greedy](#)

No tag edit access

→ Contest materials

- Announcement (en) 

In the third test case, it can be proven that no partition satisfies the constraints.

In the fourth test case, one of the partitions satisfying the constraints is $[10, 7]$, $[12, 16, 3, 15]$, $[6, 11]$. The respective medians of subarrays are 7, 12, and 6. The median of the three subarray medians is $\text{med}(7, 12, 6) = 7 \leq k$, hence this partition satisfies the constraints.

In the fifth test case, one of the partitions satisfying the constraints is $[7, 11]$, $[12, 4]$, $[9, 17]$. The respective medians of the subarrays are 7, 4, and 9. The median of the three subarray medians is $\text{med}(7, 4, 9) = 7 \leq k$, hence this partition satisfies the constraints.

In the sixth test case, the only possible partition of the array into three contiguous subarrays is $[1000]$, $[10^9]$, $[1000]$. The respective medians of the subarrays are 1000, 10^9 , and 1000. The median of the three subarray medians is $\text{med}(1000, 10^9, 1000) = 1000 \leq k$, hence this partition satisfies the constraints.

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