Problem

Given an array *A* of *N* integers and an integer *K*. You can perform the following operation any number of times on the given array :

- Choose an integer *x* such that $1 \leq x \leq K$
- Choose any index *i* such that $1 \leq i \leq N$
- Update *A[i] = x*

In different operations, different value of *x* and *i* can be chosen.

Task

Your task is to count **minimum** number of operations required such that following conditions are met:

- All elements in array *A* becomes pairwise distinct.
- Count of array elements with odd value is equal to count of array elements with even value.

If the above conditions cannot be met after any number of operations, return *-1*.

Note:

- Assume *1* Based Indexing is followed.
- Array *A* is said to have pairwise distinct elements if and only if the value of all the elements in array *A* is distinct.

Example

Assumptions:

- *N = 4*
- *A = [1, 4, 4, 1]*
- *K = 5*

Approach:

- Initial array *A* is *[1, 4, 4, 1]*
- Update *A[2] = 2*, choose *x = 2, i = 2*.
- Update *A[4] = 5*, choose *x = 5, i = 4*.
- Updated array *A* is *[1, 2, 4, 5]*
- Now, array *A* have all distinct elements and count of array elements with odd value is equal to count of array elements with even value.
- Therefore, minimum *2* operations are required.

Note, there can be other possible selections of *x and i*, at each step but the minimum number of operations remains the same.

Function description

Complete the *minUpdates* function provided in the editor. This function takes the following *3* parameters and returns an integer.

- *N*: Represents the number of elements in array *A*
- *A*: Represents the elements of array *A*.
- *K*: Represents the value of *K*

Input Format

Note: This is the input format that you must use to provide custom input (available above the **Compile and Test** button).

- The first line contains a single integer *T*, which denotes the number of test cases. *T* also specifies the number of times you have to run the *minUpdates* function on a different set of inputs.
- For each test case:-
  - First line contains an integer *N*.
  - Next line contains *N* space-separated integers denoting the elements of array *A*.
  - Next line contains an integer *K*.

Output Format

For each test case in a new line, print an integer denoting the minimum number of operations required or print *-1*, if the conditions cannot be met.

Constraints

$1 \leq T \leq 10^2$
$1 \leq N \leq 10^5$
$1 \leq A[i], K \leq 10^9$
Sum of N over all test cases doesn't exceed 10^6

Code snippets (also called starter code/boilerplate code)

This question has code snippets for C, CPP, Java, and Python.

Sample Input	Sample Output
2 6 4 1 5 5 6 8 3 4 1 2 3 1 2	1 -1

Time Limit: 1.5
Memory Limit: 256
Source Limit: