Hackerland Radio Transmitters

Hackerland is a one-dimensional city with houses aligned at integral locations along a road. The Mayor wants to install radio transmitters on the roofs of the city's houses. Each transmitter has a fixed range meaning it can transmit a signal to all houses within that number of units distance away.

Given a map of Hackerland and the transmission range, determine the minimum number of transmitters so that every house is within range of at least one transmitter. Each transmitter *must* be installed on top of an existing house.

Example

$x = [1, 2, 3, 5, 9]$
$k = 1$

3 antennae at houses 2 and 5 and 9 provide complete coverage. There is no house at location 7 to cover both 5 and 9. Ranges of coverage, are $[1, 2, 3]$, $[5]$, and $[9]$.

Function Description

Complete the *hackerlandRadioTransmitters* function in the editor below.

hackerlandRadioTransmitters has the following parameter(s):

- *int x[n]:* the locations of houses
- *int k:* the effective range of a transmitter

Returns

- *int:* the minimum number of transmitters to install

Input Format

The first line contains two space-separated integers n and k, the number of houses in Hackerland and the range of each transmitter.
The second line contains n space-separated integers describing the respective locations of each house $x[i]$.

Constraints

- $1 \leq n, k \leq 10^5$
- $1 \leq x[i] \leq 10^5$
- There may be more than one house at the same location.

Subtasks

- $1 \leq n \leq 1000$ for 50% of the maximum score.

Output Format

Print a single integer denoting the minimum number of transmitters needed to cover all of the houses.

Sample Input 0

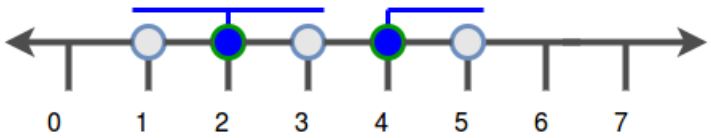
```
STDIN       Function
-----       --------
5 1         x[] size n = 5, k = 1
1 2 3 4 5   x = [1, 2, 3, 4, 5]
```

Sample Output 0

```
2
```

Explanation 0

The diagram below depicts our map of Hackerland:



We can cover the entire city by installing 2 transmitters on houses at locations 2 and 4.

Sample Input 1

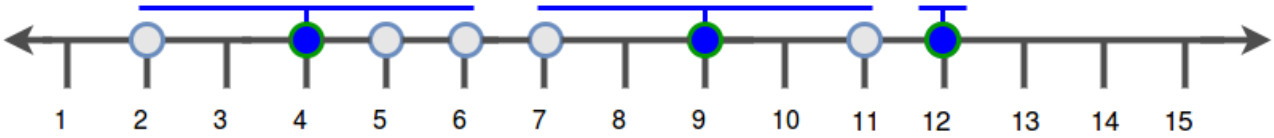
```
8 2
7 2 4 6 5 9 12 11
```

Sample Output 1

```
3
```

Explanation 1

The diagram below depicts our map of Hackerland:



We can cover the entire city by installing 3 transmitters on houses at locations 4, 9, and 12.