HackerRank

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

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

 $k = 1$

 $\bf 3$ antennae at houses $\bf 2$ and $\bf 5$ and $\bf 9$ provide complete coverage. There is no house at location $\bf 7$ to cover both $\bf 5$ and $\bf 9$. 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

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

Subtasks

• $1 \le n \le 1000$ 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.

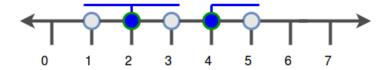
Sample Input 0

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

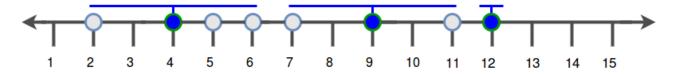
```
8 2
7 2 4 6 5 9 12 11
```

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.