k-means II

Task: A crucial part of the implementation of many clustering algorithms is finding the closest center to a point. In this task, we consider a special case of this problem where the points and centers are 1-dimensional, i.e., $P \subset \mathbb{R}$ and $C \subset \mathbb{R}$. Your task is to solve the following problem: For each query point $x \in \mathbb{R}$, decide whether the closest point in C is at distance at most R from x. If so, report the point closest to x.

Input: Each input file starts with a line with two integers and a floating point number. The first number c (integer) is the number of centers, the second number q (integer) is the number of queries, and the third number is R (floating point number with two positions after the point). Then follow c lines, each with a floating point number representing a center, and then follow q lines, each containing a floating point number representing a query point.

Output: For each of the q query points, write a line with `none in range` if the closest point is at distance $> R$, and otherwise, write a line with the closest center (with two positions after the point). If there are two closest centers $c_1, c_2 \in \mathbb{R}$, choose the smaller one.

Sample Input:

```
2 3 1.00
0.00
1.00
1.10
0.50
10.00
```

Sample Output:

```
1.00
0.00
none in range
```