

Data Structure HW5

Problem 3: Maximum Consecutive Gardens

Bob is the proprietor of a sequence of horticultural spaces and has designated certain gardens as reserved areas, exclusively for the cultivation of uncommon flora.

You are provided with two integers, `initial` and `final`, indicating that Bob possesses all the gardens within this range, inclusive. Additionally, an integer array named `reserved` is given, where `reserved[i]` specifies a garden that has been set aside for unique plants. The length of `reserved` is `n`.

Compute and return the **greatest** number of successive gardens that do not include a reserved one.

Example 1:

Input: `initial = 2`, `final = 9`, `n = 2`, `reserved = [4, 6]`

2
9
2
4 6

Output: 3

3

Explanation: Below are the intervals (inclusive) of uninterrupted gardens that do not contain a reserved one:

- (2, 3) encompassing a total of 2 gardens.
- (5, 5) encompassing a total of 1 garden.
- (7, 9) encompassing a total of 3 gardens.

Consequently, the maximum count to be returned is 3 gardens.

Example 2:

Input: `initial = 6`, `final = 8`, `n = 3`, `reserved = [7, 6, 8]`

6
8
3
7 6 8

Output: 0

0

Explanation: Every garden is reserved area, so we return 0.

Constraints:

- $1 \leq \text{reserved.length} \leq 10^5$
- $1 \leq \text{initial} \leq \text{reserved}[i] \leq \text{final} \leq 10^9$
- All the values of `reserved` are unique.