**Planting Flowers in a Flowerbed**

**Difficulty:** Easy

**Scenario**

Imagine you are a landscape designer tasked with planting flowers in a long flowerbed. The flowerbed consists of several plots, some of which are already planted with flowers, and some are empty. However, due to the garden’s rules, flowers cannot be planted in adjacent plots. You need to determine if you can plant a given number of new flowers in the flowerbed without violating this no-adjacent-flowers rule.

**Problem Statement**

Given an integer array flowerbed containing 0s and 1s, where 0 means the plot is empty and 1 means the plot is not empty, and an integer n, return true if n new flowers can be planted in the flowerbed without violating the no-adjacent-flowers rule, and false otherwise.

**Input Format**

* The first line contains an integer m representing the size of the flowerbed.
* The second line contains m space-separated integers representing the flowerbed.
* The third line contains an integer n.

**Output Format**

* A boolean value: true if n new flowers can be planted, false otherwise.

**Constraints**

* 1 <= flowerbed.length <= 2×10^4
* flowerbed[i] is 0 or 1.
* There are no two adjacent flowers in flowerbed.
* 0 <= n <= flowerbed.length

**Example 1**

**Input:**

5

1 0 0 0 1

1

**Output:**

true

**Explanation:**

* You can 1 plant flowers at position 3.

**Example 2**

**Input:**

5

1 0 0 0 1

2

**Output:**

false

**Additional Test Cases**

**Test Case 1**

**Input:**

5

0 0 1 0 0

2

**Output:**

true

**Test Case 2**

**Input:**

7

1 0 0 0 1 0 0

2

**Output:**

true

**Explanation:**

* You can only plant one flower in position 3.

**Test Case 3**

**Input:**

5

0 0 0 0 0

3

**Output:**

true

**Explanation:**

* You can plant flowers in positions 0, 2, and 4.

**Test Case 4**

**Input:**

1

1

0

**Output:**

true

**Explanation:**

* No new flowers need to be planted.

**Test Case 5**

**Input:**

1

0

1

**Output:**

true

**Explanation:**

* You can plant one flower in position 0.

**Test Case 6**

**Input:**

7

1 0 0 0 1 0 0

4

**Output:**

false

**Test Case 7**

**Input:**

7

1 0 1 0 1 0 1

1

**Output:**

false

**Test Case 7**

**Input:**

7

1 0 0 0 1 0 1

2

**Output:**

false