Problem 2212: Maximum Points in an Archery Competition

Problem Information

Difficulty: Medium
Acceptance Rate: 51.08%
Paid Only: No
Tags: Array, Backtracking, Bit Manipulation, Enumeration

Problem Description

Alice and Bob are opponents in an archery competition. The competition has set the following rules:

1. Alice first shoots `numArrows` arrows and then Bob shoots `numArrows` arrows. 2. The points are then calculated as follows: 1. The target has integer scoring sections ranging from `0` to `11` **inclusive**. 2. For **each** section of the target with score `k` (in between `0` to `11`), say Alice and Bob have shot `ak` and `bk` arrows on that section respectively. If `ak >= bk`, then Alice takes `k` points. If `ak < bk`, then Bob takes `k` points. 3. However, if `ak == bk == 0`, then **nobody** takes `k` points.

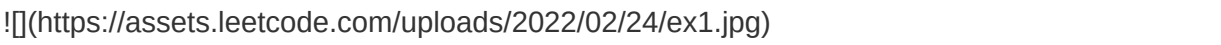
* For example, if Alice and Bob both shot `2` arrows on the section with score `11`, then Alice takes `11` points. On the other hand, if Alice shot `0` arrows on the section with score `11` and Bob shot `2` arrows on that same section, then Bob takes `11` points.

You are given the integer `numArrows` and an integer array `aliceArrows` of size `12`, which represents the number of arrows Alice shot on each scoring section from `0` to `11`. Now, Bob wants to **maximize** the total number of points he can obtain.

Return _the array_ `bobArrows` _which represents the number of arrows Bob shot on **each** scoring section from _`0` _to_ `11`. The sum of the values in `bobArrows` should equal `numArrows`.

If there are multiple ways for Bob to earn the maximum total points, return **any** one of them.

Example 1:



Input: numArrows = 9, aliceArrows = [1,1,0,1,0,0,2,1,0,1,2,0] **Output:** [0,0,0,0,1,1,0,0,1,2,3,1] **Explanation:** The table above shows how the competition is scored. Bob earns a total point of 4 + 5 + 8 + 9 + 10 + 11 = 47. It can be shown that Bob cannot obtain a score higher than 47 points.

Example 2:

Input: numArrows = 3, aliceArrows = [0,0,1,0,0,0,0,0,0,0,0,2] **Output:** [0,0,0,0,0,0,0,0,1,1,1,0] **Explanation:** The table above shows how the competition is scored. Bob earns a total point of 8 + 9 + 10 = 27. It can be shown that Bob cannot obtain a score higher than 27 points.

Constraints:

* `1 <= numArrows <= 105` * `aliceArrows.length == bobArrows.length == 12` * `0 <= aliceArrows[i], bobArrows[i] <= numArrows` * `sum(aliceArrows[i]) == numArrows`

Code Snippets

C++:

```
class Solution {
public:
vector<int> maximumBobPoints(int numArrows, vector<int>& aliceArrows) {

}
};
```

Java:

```
class Solution {
public int[] maximumBobPoints(int numArrows, int[] aliceArrows) {

}
```

```
}
```

Python3:

```
class Solution:
def maximumBobPoints(self, numArrows: int, aliceArrows: List[int]) ->
List[int]:
```