Modify The Array

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Platform	GeeksForGeeks
difficulty	Easy
tags	Array Vector
language	C++
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link	https://www.geeksforgeeks.org/problems/ease-the-array0633/1
Completion	☑

Intuition

The problem involves modifying an array based on specific rules: whenever two consecutive elements are the same, double the value of the first element and set the second element to zero. After performing this operation, all non-zero elements should be shifted to the front, maintaining their relative order, and the remaining elements should be filled with zeros.

Approach

1. Traverse the array and whenever two consecutive elements are the same, double the value of the first and set the second to zero.
2. Create a new array `answer` to store the modified values.
3. Iterate through the original array, and for each non-zero element, copy it to the new array, ensuring the non-zero elements are moved to the front.
4. Return the newly modified array with non-zero elements shifted and the rest as zeros.

Complexity

Time Complexity:

- The algorithm requires a single pass over the input array to perform the modifications and another pass to fill in the result array with non-zero values.
- Thus, the time complexity is **O(n)**, where **n** is the size of the input array.

Space Complexity:

- We are using an auxiliary array `answer` of size **n**, so the space complexity is **O(n)**.

Code

```
class Solution {
  public:
    vector<int> modifyAndRearrangeArray(vector<int> &arr) {
        int n = arr.size();
        int j = 0;
        vector<int> answer(n, 0);
```

```
        for(int i = 0; i < n; i++) {
            if(i + 1 < n && arr[i] == arr[i + 1]) {
                arr[i] *= 2;
                arr[i + 1] = 0;
            }
        }

        for(int i = 0; i < n; i++) {
            if(arr[i] != 0) {
                answer[j++] = arr[i];
            }
        }
        return answer;
    }
};
```