16. Rearrange Array Alternately

Medium Accuracy: 50.0% Submissions: 22536 Points: 4

Given a sorted array of positive integers. Your task is to rearrange the array elements alternatively i.e first element should be max value, second should be min value, third should be second max, fourth should be second min and so on.

Example 1:

```
Input:
N = 6
arr[] = {1,2,3,4,5,6}
Output: 6 1 5 2 4 3
Explanation: Max element = 6, min = 1,
second max = 5, second min = 2, and
so on... Modified array is : 6 1 5 2 4 3.
```

Expected Time Complexity: O(N).
Expected Auxiliary Space: O(1).

Constraints:

```cpp
class Solution{
    public:

    //Function to rearrange  the array elements alternately.
    void rearrange(long long *arr, int n)
    {
        //Initialising index of first minimum and first maximum element.
        int max_idx = n - 1, min_idx = 0;

        //Storing maximum element of array.
        int max_elem = arr[n - 1] + 1;

        for (int i = 0; i < n; i++) {
            //At even index, we have to put maximum elements in decreasing order.
            if (i % 2 == 0) {
                arr[i] += (arr[max_idx] % max_elem) * max_elem;
                //Updating maximum index.
                max_idx--;
            }

            //At odd index, we have to put minimum elements in increasing order.
            else {
                arr[i] += (arr[min_idx] % max_elem) * max_elem;
                //Updating minimum index.
                min_idx++;
            }
        }

        //Dividing array elements by maximum element to get the result.
        for (int i = 0; i < n; i++)
            arr[i] = arr[i] / max_elem;
    }
};
```

① Using the same logic as in Rearr...
O(1)

② To make max_elem > max_elem where the transformation hasn't been applied.
To obtain correct value

4 0 1 2 3 → 0 4 1 2 5 → 4