Union of two sorted Array in C++ #include <iostream> #include <vector> using namespace std; vector<int> unionOfArrays(int a[], int b[], int m, int vector<int> unionList; int i = 0, j = 0; while (i < m && j < n) { if (a[i] < b[j]) { if (unionList.empty() | | unionList.back() != a[i]) { unionList.push_back(a[i]); i++; $else if (b[j] < a[i]) {$ if (unionList.empty() | | unionList.back() != b[j]) { unionList.push_back(b[j]); j++; } else { if (unionList.empty() | | unionList.back() != a[i]) { unionList.push_back(a[i]); i++; j++; } // Remaining elements of a, if any while (i < m) { if (unionList.empty() | | unionList.back() != a[i]) unionList.push_back(a[i]); i++; // Remaining elements of b, if any while (j < n) { if (unionList.empty() | | unionList.back() != b[j]) unionList.push_back(b[j]); j++; } return unionList; } int main() { int a [] = $\{1, 2, 4\}$; int $b[] = {3, 5, 6};$ int m = sizeof(a) / sizeof(a[0]);int n = sizeof(b) / sizeof(b[0]);vector<int> unionList = unionOfArrays(a, b, m, n);

Input:

 $a[] = \{1, 2, 4\}$ $b[] = \{3, 5, 6\}$

Expected Output:

123456

ờ Tabular Dry Run:

i	j	a[i]	b[j]	Comparison	Action	unionList
0	0	1	3	a[i] < b[j]	push 1, i+ +	[1]
1	0	2	3	a[i] < b[j]	+	[1, 2]
2	0	4	3	b[j] < a[i]	push 3, j+ +	[1, 2, 3]
2	1	4	5	a[i] < b[j]	push 4, i+ +	[1, 2, 3, 4]
3	1	-	5	i == m	loop to remaining b	
	1	-	5		push 5, j+ +	[1, 2, 3, 4, 5]
	2	-	6		push 6, j+ +	[1, 2, 3, 4, 5, 6]

What this function does well:

- Merges two sorted arrays.
- Skips **duplicate elements** (if any).
- Maintains **sorted order** in the output.
- Uses two-pointer approach, which is very efficient:
 - Time complexity: O(m + n)
 - Space complexity: O(m + n) in worst case (if no duplicates)

♥ Final Output:

123456

```
for (int i = 0; i < unionList.size(); i++) {
    cout << unionList[i] << " ";
    }
    cout << endl;
    return 0;
}

1 2 3 4 5 6
```