Q4. Given two arrays of equal size n and an integer k. The task is to permute both arrays such that the sum of their corresponding element is greater than or equal to k i.e a[i] + b[i] >= k. The task is to print “Yes” if any such permutation exists, otherwise print “No”.

Input :
a[] = {2, 1, 3}, b[] = { 7, 8, 9 }, k = 10.
Output : Yes

Input :
a[] = {1, 2, 2, 1}, b[] = { 3, 3, 3, 4 }, k = 5.
Output : No

$$6 + 4 = 10$$
$$7 + 3 = 10$$
$$8 + 2 = 10$$
$$9 + 1 = 10$$

$9 + 4 = 13$ ✓

$6 + 1 = 7$ ✗

$a = \{2, 1, 3\} \rightarrow \{1, 2, 3\}$ $\{1, 2, 3\}$

$K = 10$ $b = \{7, 8, 9\} \rightarrow \{7, 8, 9\}$ $\{9, 8, 7\}$

10 10 10

Yes

Sum >= K

1. Sort → Ascending
2. Sort → Descending

1. Sort a in ascending order
2. Sort b in descending order
3. Iterate and check check condition

$a[i] + b[i] >= K$ → Yes

$a[i] + b[i] < K$ → No

a = {1, 2, 2, 1}

b = {3, 3, 3, 4}

K = 5

Sort a asc → {1, 1, 2, 2} asc

Sort b desc → {4, 3, 3, 3} desc

a[i] + b[i] >= K

5 ✓ 4 x 5 ✓ 5 ✓

No

a = {1, 3, 5, 2}

b = {4, 3, 6, 8}

k = 6

0 1 2 3

1. sort a asc → {1, 2, 3, 5}
2. sort b desc → {8, 6, 4, 3}
3. check the condition 9 8 7 8 a[i] + b[i] >= k

yes

Time Complexity : $O(n \log n)$

Sorting $\rightarrow O(n \log n)$

Space complexity : Auxiliary space : $O(1)$

Total space complexity : $O(n)$