Dashboard ❯ Algorithms ❯ Greedy ❯ Permuting Two Arrays

Badge Progress (Details)

Points: 2047.04 Rank: 5607

Permuting Two Arrays 🔖

by Khongor

| Problem | Submissions | Leaderboard | Discussions | Editorial | Topics |

Consider two n-element arrays of integers, $A = [a_0, a_1, \ldots, a_{n-1}]$ and $B = [b_0, b_1, \ldots, b_{n-1}]$. You want to permute them into some A' and B' such that the relation $a'_i + b'_i \geq k$ holds for all i where $0 \leq i < n$. For example, if $A = [0, 1]$, $B = [0, 2]$, and $k = 1$, a valid A', B' satisfying our relation would be $A' = [1, 0]$ and $B' = [0, 2]$.

You are given q queries consisting of A, B, and k. For each query, print YES on a new line if some permutations A', B' exist satisfying the relation above. If no valid permutations exist, print NO instead.

Input Format

The first line contains an integer, q, denoting the number of queries. The $3q$ subsequent lines describe each of the q queries in the following format:

1. The first line contains two space-separated integers describing the respective values of n (the size of arrays A and B) and k (the relation variable).
2. The second line contains n space-separated integers describing the respective elements of array A.
3. The third line contains n space-separated integers describing the respective elements of array B.

Constraints

- $1 \leq q \leq 10$
- $1 \leq n \leq 1000$
- $1 \leq k \leq 10^9$
- $0 \leq a_i, b_i \leq 10^9$

Output Format

For each query, print YES on a new line if valid permutations exist; otherwise, print NO.

Sample Input

```
2
3 10
2 1 3
7 8 9
4 5
1 2 2 1
3 3 3 4
```

Sample Output

```
YES
NO
```

Explanation

We perform the following two queries:

1. $A = [2, 1, 3]$, $B = [7, 8, 9]$, and $k = 10$. We permute these into $A' = [1, 2, 3]$ and $B' = [9, 8, 7]$ so that the following statements are true:
   - $a_0 + b_0 = 1 + 9 = 10 \geq k$
   - $a_1 + b_1 = 2 + 8 = 10 \geq k$
   - $a_2 + b_2 = 3 + 7 = 10 \geq k$

Thus, we print YES on a new line.

2. $A = [1, 2, 2, 1]$, $B = [3, 3, 3, 4]$, and $k = 5$. To permute A and B into a valid A' and B', we would need at least three numbers in A to be greater than 1; as this is not the case, we print `NO` on a new line.

f y in

Submissions: 16611
Max Score: 40
Difficulty: Easy

Rate This Challenge:
★★★★☆ Thanks!

Need Help?
Greedy Technique

Sorting

More

| Current Buffer (saved locally, editable) 🔀 🕐 | C# ⌄ | ⤢ ⚙ |

```csharp
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5
6  class Solution {
7      static void Main(String[] args) {
8          /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be
   named Solution */
9
10             int q = int.Parse(Console.ReadLine());
11
12                 while (q-- > 0)
13                 {
14                     string[] input = Console.ReadLine().Split(' ');
15                     int n = int.Parse(input[0]);
16                     int k = int.Parse(input[1]);
17
18                     int[] a = Array.ConvertAll(Console.ReadLine().Split(' '), e => int.Parse(e));
19                     int[] b = Array.ConvertAll(Console.ReadLine().Split(' '), e => int.Parse(e));
20
21                     Array.Sort(a);
22                     Array.Sort(b);
23                     Array.Reverse(b);
24
25                     string ans = "YES";
26                     for (int i = 0; i < n; i++)
27                     {
28                         if (a[i] + b[i] < k)
29                         {
30                             ans = "NO";
31                             break;
32                         }
33                     }
34
35                     Console.WriteLine(ans);
36                 }
37
38      }
39  }
```

Line: 8 Col: 26

⬆ Upload Code as File   ☐ Test against custom input   Run Code   Submit Code

Congrats, you solved this challenge!

✔ Test Case #0   ✔ Test Case #1   ✔ Test Case #2
✔ Test Case #3   ✔ Test Case #4   ✔ Test Case #5

✔ Test Case #3   ✔ Test Case #4   ✔ Test Case #5

✔ Test Case #6   ✔ Test Case #7   ✔ Test Case #8

✔ Test Case #9

Next Challenge

Join us on IRC at #hackerrank on freenode for hugs or bugs.

Contest Calendar | Interview Prep | Blog | Scoring | Environment | FAQ | About Us | Support | Careers | Terms Of Service | Privacy Policy | Request a Feature