C - Robot Factory

Editorial (/contests/abc431/tasks/abc431_c/editorial)

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 300 points

Problem Statement

Takahashi can combine a head part and a body part to create a robot. A robot falls over if the weight of the head part is greater than the weight of the body part.

Currently, he has N head parts and M body parts. The weight of the i-th $(1 \leq i \leq N)$ head part is H_i grams, and the weight of the i-th $(1 \leq i \leq M)$ body part is B_i grams.

He wants to create a total of K robots that do not fall over by appropriately combining the parts he has. Determine whether he can achieve his goal by combining the parts well.

Here, a part cannot be used to create multiple robots, and two or more head parts (or two or more body parts) cannot be used to create one robot.

Constraints

- $1 \leq N \leq 2 \times 10^5$
- $1 \leq M \leq 2 \times 10^5$
- $1 \leq K \leq \min\{N, M\}$
- $1 \leq H_i \leq 10^9$ $(1 \leq i \leq N)$
- $1 \leq B_i \leq 10^9$ $(1 \leq i \leq M)$
- All input values are integers.

Input

The input is given from Standard Input in the following format:

$$
\begin{array}{llll}
N & M & K & \\
H_1 & H_2 & \ldots & H_N \\
B_1 & B_2 & \ldots & B_M
\end{array}
$$

Output

Print `Yes` if Takahashi can combine the parts well to create K robots that do not fall over; otherwise, print `No`.

Sample Input 1 Copy

```
6 6 3
2 7 1 8 2 8
1 8 2 8 4 5
```

Sample Output 1 Copy

```
Yes
```

If we denote combining the i-th head part and the j-th body part as (i, j), then Takahashi can create three robots that do not fall over by combining them as $(1, 2)$, $(2, 4)$, $(3, 6)$, for example.

Thus, print `Yes`.

Sample Input 2 Copy

```
1 1 1
43
1
```

Sample Output 2 Copy

```
No
```

His head part is too heavy, so he cannot create any robot that does not fall over.

Sample Input 3 Copy

```
1 1 1
100
100
```

Sample Output 3 Copy

```
Yes
```

Note that a robot does not fall over if the head and body have equal weights.

Sample Input 4 Copy

```
12 15 12
748 169 586 329 972 529 432 519 408 587 138 249
656 114 632 299 984 755 404 772 155 506 832 854 353 465 387
```

Sample Output 4 Copy

```
Yes
```

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