Sparse Matrix

Write a C program to multiply two sparse matrices. The program should take as input, two sparse matrices X and Y, return the result of XY. You have to optimize your code and avoid useless multiplications. Also, you have to validate your input. If the input is not valid, the print "Not Valid".

Input Format

The first line contains two integers n and m (the dimensions of X array)

Then an array of numbers is given, n lines each containing m numbers.

The next line contains two integers k and w (the dimensions of Y array)

Then an array of numbers is given, k lines each containing w numbers.

Constraints

- -2^31 <= X[i], Y[j] <= 2^31 - 1

Output Format

Print the two dimensional correct array (the result of mmultiplication). Print x lines and each one contains y numbers.

Sample Input 0

```
2 3
5 0 0
0 0 8
3 3
3 0 0
0 0 0
-1 0 1
```

Sample Output 0

```
15 0 0
-8 0 8
```

Sample Input 1

```
2 3
0 0 0
0 0 0
3 2
0 0
0 0
-1 0
```

Sample Output 1

```
0 0
0 0
```

Sorting Hero

Assume you are a product manager and currently leading a team to develop a new product and want to give your team some tasks. But, you should give each developer at most one task. Each developer i has a factor $h[i]$, which is the minimum number of hours that the developer should be able to work; and each task j has can be finished within hours $t[j]$. If the task j can be done within the working hours of the developer i, we can assign the task j to the developer i. Your goal is to maximize the number of working developers and output the maximum number.

Note: You should implement any algorithm by yourself and without any libraries.

Input Format

The first line contains two integers N and Q (the size of h and t arrays)

The second line contains N integers, array h0,h1,...hN.

The third line contains Q integers, array t0,t1,...tQ.

Constraints

- $0 <= h.length <= 4 * 10^4$

- $0 <= t.length <= 4 * 10^4$

- $1 <= h[i], t[j] <= 2^{31} - 1$

Output Format

Print the answer of the maximum number of working developers.

Sample Input 0

```
3 2
1 2 4
1 3
```

Sample Output 0

```
2
```

Explanation 0

You have 3 developers and 2 tasks. The working hours of 3 developers are 1, 2, 4. And even though you have 2 tasks, one can be done in 1 hour and the other can be done in 3 hours, you could only assign 2 tasks to 2 developers (the first and the third). You need to output 2

Sample Input 1

```
3 3
5 6 8
3 2 9
```

Sample Output 1

```
2
```

Linked List Hero

Write a C program to delete the duplicates in linked list. The program should read a sorted linked list and print it after removing duplicates.

Task Complete the function *remove_duplicates* in your editor so that it removes the duplicates from a sorted list.

Input Format

The first line contains N, the number of elements i the list. Each of the next lines contains an integer represents an element in the list.

Constraints

- The list is guaranteed to be sorted in ascending order.

Output Format

Print the unique elements of the linked list.

Sample Input 0

```
5
1
2
2
3
4
```

Sample Output 0

```
1
2
3
4
```

Sample Input 1

```
6
-4
3
3
3
6
7
```

Sample Output 1

```
-4
3
6
7
```