

InterviewBit

interviewbit.com/test/3cc2b636ed/#/problem_2

Trilogy Innovations 12th June 2022

00 Hr : 49 min : 42 sec

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End Test

Flag Question

Q 1

Q 2

Q 3

Q 4

Q 5

Q 6

Hospitals

Problem Description

There are N villages located on a straight highway, the highway allows only one directional traffic that is away from the start of the highway.
The positions of villages are given by an array A , where A_i denotes the distance of village from start of the highway.
The population of villages are given by another array B .
Local government wants to build hospitals in C villages such that sum of the minimum distance travelled by every person to reach a hospital is minimum.
Find minimum sum of distance to travel possible by buliding hospitals optimally in villages.

Note: There should always be a hospital in the last village that is farthest village from the start of the highway.

Problem Constraints

$1 \leq N \leq 1000$
 $1 \leq A_i \leq 10^9$
 $1 \leq B_i \leq 10^5$
 $1 \leq C \leq N$

Input Format

First argument is an integer array A .
Second arguemnt is an integer array B .
Third argument is an integer C .

Output Format

Return an integer.

Example Input

Input 1:

- i
- S1
- Q 1
- Q 2
- Q 3
- Q 4
- Q 5
- Q 6

Output Format

Return an integer.

Example Input

Input 1:

A = [1, 2, 3]
B = [1, 2, 3]
C = 2

Input 2:

A = [1, 2, 3]
B = [1, 2, 3]
C = 3

Example Output

Output 1:

1

Output 2:

0

Example Explanation

Explanation 1:

We can build hospitals at the villages 2 and 3.
The citizens of above two villages doesn't need to travel.
Citizens of village 1 can go to village 2, thus distance travelled = $(3-2)*1 = 1$.

Output 2:

0

Example Explanation

Explanation 1:

We can build hospitals at the villages 2 and 3.
The citizens of above two villages doesn't need to travel.
Citizens of village 1 can go to village 2, thus distance travelled = $(3-2)*1 = 1$.

Explanation 2:

All villages can have their own hospital.



You only need to implement the given function. Do not read input; instead use the arguments to the function. Do not print the output; instead return values as specified. Still have a question? Check out Sample Codes for more details.



See Expected Output

Editor Mode - Normal

JavaScript (ES6)

```
1 module.exports = {  
2   //param A : array of integers  
3   //param B : array of integers  
4   //param C : integer  
5   //return a long integers  
6   solve : function(A, B, C){
```



S1

Q 1

Q 2

Q 3

Q 4

Q 5

Q 6

Moving Rabbits

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Problem Description

There are N rabbits standing on an infinite number line.

Every rabbit has some specific characteristic represented by lowercase latin letters given by string A .

Initially they are at some integer position B_i . They will start moving when you order them with **1 unit per second**.

Their initial direction will be given by an integer array C , which contains only **1** or **-1**.

1 mean that rabbit will move in positive direction or right side of the number line and **-1** mean opposite direction.

If two rabbits with same characteristic value meet they will change their direction of movement.

Find the sum of distance of all the possible pair of rabbits after D seconds when you ordered them to move.

Problem Constraints

$$1 \leq N \leq 10^5$$

$A_i = \{\text{lowercase latin alphabets}\}$

$$-10^6 \leq B_i \leq 10^6$$

$$C = \{1, -1\}$$

$$0 \leq D \leq 10^6$$

Input Format

First argument is a string A .

Second argument is an integer array B .

Third argument is an integer array C .

Fourth argument is an integer D .

Output Format

Return an integer.

Example Input

- Info Icon
- Calendar Icon
- S1
- Q 1
- Q 2
- Q 3
- Q 4
- Q 5
- Q 6

Example Input

Input 1:

```
A = "aba"
B = [-2, 0, 2]
C = [1, -1, -1]
D = 3
```

Input 2:

```
A = "cd"
B = [1, 0]
C = [1, -1]
D = 2
```

Example Output

Output 1:

8

Output 2:

5

Example Explanation

Explanation 1:

After 0 second the positions are [-2, 0, 2]
After 1 second the positions are [-1, -1, 1]
After 2 second the positions are [0, 2, 0]
After 3 second the positions are [-1, 3, 1]
Since the string "aba" is present in the sequence of positions, the answer is 8.

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Tired Librarian

Problem Description

You are a librarian, and after a long day, you decide to collect all the books kept on tables.

In front of you, there are several stacks of books, $A[i]$ denotes the size of the i 'th stack of books. In one move you can pick an existing stack of books and merge it with another stack of books. The efforts required for this task is the **size of stack** being **added**. After this move new stack size is sum of both the stacks.

To make this task fun you like to add some challenge to it and decide that, to any stack you will not add books to it for more than **B** times after that it will be added to any other stack. What is the minimum efforts required to collect all the books in one stack?

Problem Constraints

$1 \leq |A| \leq 10^5$
 $1 \leq A[i] \leq 10^9$
 $1 \leq B \leq 10^5$

Input Format

First argument **A** is an array of sizes of stacks of books.

Second argument **B** is the integer denoting the maximum time books can be merged to a particular stack.

Output Format

Return an integer denoting minimum efforts required by librarian.

Example Input

Input 1:

A = [3, 2, 1, 10]

S1

Q 1

Q 2

Q 3

Q 4

Q 5

Q 6

i

📅

S1 ▾

Q 1 🔒

Q 2 🔒

Q 3

Q 4

Q 5 🔒

Q 6

Example Input

Input 1:

A = [3, 2, 1, 10]
B = 2

Input 2:

A = [3, 3, 2]
B = 1

Example Output

Output 1:

7

Output 2:

7

Example Explanation

Explanation 1:

Add stack of size 1 to stack of size 2 with '1' efforts, and resulting stack becomes 3.
Current stacks would look like [3, 3, 10]
Now add both the '3's to '10' with efforts 3 + 3.
So total efforts become 7.

Explanation 2:

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End Test

S1

Q 1

Q 2

Q 3

Q 4

Q 5

Q 6

Example Explanation

Explanation 1:

Add stack of size 1 to stack of size 2 with '1' efforts, and resulting stack becomes 3.
Current stacks would look like [3, 3, 10]
Now add both the '3's to '10' with efforts 3 + 3.
So total efforts become 7.

Explanation 2:

Add stack of size 2 to stack of size 3 with '2' efforts.
Resulting array looks like [3, 5]
Now since we cannot add 3 to 5 as already 1 stack has been added to it.
We add 5 to 3. So total efforts become 7

You only need to implement the given function. Do not read input; instead use the arguments to the function. Do not print the output; instead return values as specified. Still have a question? Check out Sample Codes for more details.

Editor Mode - Normal

JavaScript (ES6)

```
1 module.exports = {
2   //param A : array of integers
3   //param B : integer
4   //return a long integers
5   solve : function(A, B){
6
7   }
8 }
```


-
-
- S1
- Q 1
- Q 2
- Q 3
- Q 4
- Q 5
- Q 6

XOOR

Problem Description

You are given two integer arrays **A** and **B**. Let's define another array **C** of size $|A| * |B|$ containing **Bitwise OR** of all possible pairs of elements of **A** with all elements of **B** i.e. $A[i] | B[j]$ for all valid **i** and **j**.

Find the **Bitwise XOR** of array **C** i.e $C[1] \oplus C[2] \oplus C[3] \oplus \dots \oplus C[|A| * |B|]$.

Problem Constraints

$1 \leq |A| \leq 10^5$
 $1 \leq |B| \leq 10^5$
 $0 \leq A[i] \leq 10^9$
 $0 \leq B[i] \leq 10^9$

Input Format

The first argument is integer array **A** and the second argument is integer array **B**.

Output Format

Return **Bitwise XOR** of array **C**.

Example Input

Input 1 :

A=[2]
B=[5,0,3]

Input 2 :

- i
- 📅
- S1
- Q 1
- Q 2
- Q 3
- Q 4
- Q 5
- Q 6

Example Input

Input 1 :
A=[2]
B=[5,0,3]

Input 2 :
A=[1,2]
B=[4,10]

Example Output

Output 1 :
6

Output 2 :
2

Example Explanation

Example 1 :

Array C = [7, 2, 3]. Bitwise XOR of C = 6.

Example 2 :

Array C = [5, 11, 6, 10]. Bitwise XOR of C = 2.



S1

Q 1

Q 2

Q 3

Q 4

Q 5

Q 6

[Flag Question](#)

Genius Gary

Problem Description

Gary being the smartest guy in the town is a friend of you.

He challenges you with an interesting problem. He gives you a number **A** and asks you to find the number of "actual" greater pairs till A.

An actual greater pair(a, b) means that it should hold following conditions

- $0 \leq a < b \leq n$
- Sum of digits of a < Sum of digits of b

The number A is given you in form of a string as it can be very huge!

Return the number of actual greater pairs with above conditions **modulo $1e9+7$** .

Problem Constraints

 $1 \leq A \leq 10^{100}$

Input Format

First argument A is a number in form of a string.

Output Format

Return an integer denoting number of actual greater pairs modulo $1e9+7$.

Example Input

Input 1:

2

- Info icon
- Calendar icon
- S1
- Q 1
- Q 2
- Q 3
- Q 4
- Q 5
- Q 6

Example Input

Input 1:
2

Input 2:
5

Example Output

Output 1:
3

Output 2:
15

Example Explanation

Explanation 1:
The actual greater pairs are [(0,1), (0, 2), (1, 2)]

Explanation 2:
All the possible pairs under 5 are actual greater pairs