Minimum Sum 18 Sep 2024 (Prime Coding)

You are given two integer arrays A and B of length N on which you have to perform below operation:

In one operation, you can swap any two elements of 'A' or any two elements of 'B'

Your task is to find and return an integer value representing the minimum possible sum of A[i]*B[i] after performing the above operation any number of times.
Note: The operation can also be performed 0 number of times.

Input Specification:

- input1: An integer value N representing the size of arrays.

- input2: An integer array A

- input3: An integer array B

Output Specification:

Return an integer value representing the minimum possible sum of A[i]*B[i] after performing the above operation any number of times.

Example 1:
input1: 4
input2: {1,4,3,2}
input3: {1,4,3,4}
Output: 25

Explanation:
Here A = {1,4,3,2} and B = {1,4,3,4}. To minimize the sum, we can swap the first two elements of A i.e., 4 and 1. The array will now become (4,1,3,2). The sum obtained will be 25, which is the minimum. Hence, 25 is returned as the output.

Example 2:
input1:3
input2: (4,1,6)
input3: (3,1,2)
Output : 17

Explanation:
Here, A = (4,1,6) and B= (3,1,2). To minimize the sum, we can swap the first two elements of A. i.e., 4 and 1 and the last two elements of B i.e., 1 and 2. The array A and B will now become (1,4,6) and (3,2,1) respectively. The sum obtained will be 17, which is the minimum. Hence, 17 is returned as the output.

Magical Library 18 Sep 2024 (Prime Coding)

In a magical library, each bookshelf is represented by a two-dimensional array A, where each row of the 2D array A[i] represents the series value of a book.

A row is considered magical if the sum of the odd values of the series of a book is even. Your task is to find and return an integer value representing the number of magical rows.

Input Specification:

- input1: An integer value representing the number of rows in the 2D array.

- input2: An integer value representing the number of columns in the 2D array.

- input3: A 2D integer array where each row represents a series of books.

Output Specification: Return an integer value representing the number of magical rows.

Example 1:

input1: 3
input2:3
input3: ((1, 2, 3), (4, 5, 6), (7, 8, 9))
Output: 2

Explanation:
Here,the given 2D array is {{1, 2, 3} , {4, 5, 6}, {7, 8, 9}}

- In the first row {1, 2, 3} the odd numbers are {1, 3} and their sum is 4 which is even.

- In the second row {4, 5, 6} the odd numbers are {5} and as there is only one odd element so the sum is 5 which is odd.

- In the third row {7, 8, 9} the odd numbers are {7, 9} and their sum is 16 which is even.

Therefore, there are only 2 magical rows so, 2 is returned as the output.

Example 2:
input1 : 3
input2 : 2
input3: {{2, 4} (0,0), {11, 11}}
Output: 1

Explanation:
 Here, the given 2D given array {{2, 4} (0,0), {11, 11}},

Only the last row {11, 11} has odd elements and their sum is 22 which is even. Therefore, there is only 1 magical row so 1 is returned as the output.

Alex's Reading Problem(Prime Coding)

Alex is a high school student who loves reading and has a summer break coming up. He has a list of books he wants to read, with each book's estimated reading time stored in an array A. Alex has N hours available during the break for reading. Your task is to help Alex determine the maximum number of books he can read without exceeding his total available reading hours.

Input Specification:

● input1: An integer array A, where each element represents the estimated time to read each book.

● input2: An integer N, representing the total number of hours Alex has available for reading.

● input3: An integer size, representing the size of the array A.

Output Specification:

● Return an integer value representing the maximum number of books Alex can read without exceeding his total available reading hours.

Example 1:

● input1: [4, 2, 3, 1]

● input2: 5

● input3: 4
 Output: 2

Explanation:
Here N=5 and Alex has 4 books with reading times of 4, 2, 3, and 1 respectively then

● The optimal way to utilize the 5 hours is to read the books with reading times of 2 and 1hour.

● Ifhe starts reading the book within 3 hours, then it will exceed the time limit.
The maximum number of books that can be read is 2.

Hence,2is returned as output.

Password Distance Problem(Prime Coding)

Jim has a password represented by a string S consisting of lowercase English letters (a-z) and digits (0-9). The distance between two characters is defined as the absolute difference between their indices in the string. Your task is to find and return the maximum distance between two non-similar characters within the given password S.

Note: ***The distance between two adjacent characters is 1.***

Input Specification:

● input1: A string S containing lowercase English letters (a-z) and digits (0-9).

Output Specification:

● Return an integer representing the maximum distance between two non-similar characters within the given password S.

Example 1:

● Input: abc10

● Output: 4

Explanation:
Inthestringabc10, the maximum distances between non-similar characters are:

1. Between a and 0 (indices 0 and 4): Distance is 4.

2. Between b and 0 (indices 1 and 4): Distance is 4.

Other combinations yield a shorter distance. Therefore, the maximum distance between two non-similar characters is 4.
Example 2:

● Input: bbbb

● Output: 0

Explanation:
 In the string bbbb, all characters are the same, so there are no two non-similar characters to compare. Thus, the maximum distance between two non-similar characters is 0.

Chocolate Distribution Problem(Prime Coding)

You are organizing a charity event in a village, where you distribute chocolates to children sitting in a circle. While the distribution of chocolates follows a specific set of rules based on their position in the circle:

The ith child receives i chocolates. If a child's position is adjacent to a multiple of 5, they receive an additional 2 chocolates.
Given the number of children in a circle, your task is to calculate and return an integer value representing the total number of chocolates distributed.
Note: Return mod of total to manage overflow with 1e9+7.

Input Specification:

● input1: An integer value N, representing the number of children.

Output Specification:
 Return an integer value representing the total number of chocolates distributed.

Example 1:
 input1:   5
 Output: 19

Explanation:
 Here N=5, so the chocolates each child receives while sitting in the circle is

● Child 1: 1 (since position is 1) and +2 (Additional gift), since they are sitting in circle child 5 will be adjacent to child 1. So child 1 gets 3 chocolates.

- Child 2: 2 (since position 2) chocolates

- Child 3: 3 chocolates.

- Child 4: 6 chocolates (4 base + 2 additional)

- Child 5: 5 chocolates.

Addingchocolates of each child will give us 19 (3+2+3+6+5). Hence, 19 is returned as output.

Example2:

Input1: 3
Output: 6

Pen Switching Problem(Prime Coding)

You are a teacher creating an engaging math activity for your students by writing N numbers on the classroom whiteboard. You use a green pen for odd numbers and a red Join Pen for even numbers. Your task is to find and return an integer value representing the number of times you need to switch from the green pen to the red pen while writing these numbers.

Input Specification:

- input1: An integer value N

- input2: An integer array representing the numbers to be written

Output Specification:

Return an integer value representing the number of times you need to switch from the green pen to the red pen while writing these numbers.

Example 1:

input1 : 5
Input2: (1,2,1,6,10,9)
Output: 2

Explanation:

The given sequence which he has to write is 1->2->1->6->10->9

Below is the sequence of pen, the teacher has to use:

1. Green pen to write 1

2. Red pen to write 2

3. Green pen to write 1

4. Red pen to write 6 and 10

5. Green pen to write 9

Therefore, we need to change from green pen to red twice. Hence, 2 is returned as output.

Example 2:
input1: 6
input2: (70,23,13,26,72,19)
Output: 1

Explanation:
The given sequence which he has to write is 70->23->13->26->72->19

Library Book Collection Problem(Prime Coding)

There is a library having N shelves in it. Each shelf is labeled from 1 to N and is stocked with A[i] books on each shelf. You have to select books only from shelves that have prime-numbered labels. Additionally, there is a limit of K books that you can select from each shelf.

Your task is to find and return an integer value representing the maximum number of books you can collect during a single visit to the library.
Note: Assume 1-based indexing.

Input Specification:

● input1: An integer value **N** representing the number of shelves in the library.

● input2: An integer value **K** representing the maximum number of books you can collect from each shelf.

● input3: An integer array A representing the number of books on each shelf.

Output Specification:
Return aninteger value representing the maximum number of books that you can collect during a single visit to the library.

Example 1:
input1: 2
input2: 4
input3: [10, 2]

Output: 2

Explanation:
Here, the given value of K is 4, which is the maximum number of books we can select from each shelf. Since we only have to select books from prime-numbered shelves, that is the shelf with index 2, and this shelf contains 2 books. So, we collect all books from it. Therefore, 2 is returned as the output.

Example 2:
input1: 4
input2: 5
input3: [3, 7, 5, 6]

Output: 10

Cryptographer 18 Sep 2024 (Prime Coding)

An ancient journal was found containing an encrypted message. The encryption used in the journal shifts each character one position forward in the alphabet. For example 'a' becomes 'b', 'b' becomes 'c', and so on. However, 'z' wraps around and becomes 'a'. Alex, a cryptographer, needs to decrypt this journal by reversing the shift. Your task is to return the decryptedstring by shifting each character one position back in the alphabet. For example:

● Theletter 'b' becomes 'a', 'c' becomes 'b', and so on.

● Iftheletter is 'a', it becomes 'z'.

Note: Thejournal contains only lowercase English letters.

Input Specification:
input1:Astringvalue consisting of lowercase English letters

Output Specification:
Returnthedecryptedstring after shifting all the characters one position back

Example 1:
input1 : bcd
Output: abc

Library Book Sorting(Prime Coding)

You are a librarian in a bustling library where books are arranged in a single line, each represented by a letter from A to Z. One day in a hurry you mistakenly arranged some books out of order. Given a string S of length N representing the books, your task is to find and return an integer value representing the minimum number of books (indices in the string) that need to be moved to sort the row alphabetically.

Input Specification:

 ● input1: An integer value N representing the length of string.

 ● input2: A string S representing the current order of the books.

Output Specification:
Return an integer representing the minimum number of books (indices in the string) that needs to be moved to sort the row alphabetically.

Example 1:
input1: 5
input2: helco
Output: 3

Explanation:

 The given string is "helco". When the string is sorted, it becomes "cehlo". So, to sort the given string, characters at the indices 0, 2, and 3 are needed to be rearranged. Since there are 3 indices whose characters need to be rearranged to sort the string 3 is returned as the output.

Example 2:

input1: 4

input2: asdf

Output: 3

Explanation:

 The givenstring is "asdf". When the string is sorted, it becomes "adfs". So, to sort the given string, characters at indices 1, 2, and 3 need to be rearranged. Since there are 3 indices whose characters need to be rearranged to sort the string, 3 is returned as the output.

input1: 4

input2: asdf

Output: 3