 DisappearingPairs

A string S containing only the letters "A", "B" and "C" is given. The string can be transformed by removing one occurrence of "AA", "BB" or "CC".

Transformation of the string is the process of removing letters from it, based on the rules described above. As long as at least one rule can be applied, the process should be repeated. If more than one rule can be used, any one of them could be chosen.

Write a function:

class Solution { public String solution(String S); }

that, given a string S consisting of N characters, returns any string that can result from a sequence of transformations as described above.

For example, given string S = "ACCAABBC" the function may return "AC", because one of the possible sequences of transformations is as follows:



Also, given string S = "ABCBBCBA" the function may return "", because one possible sequence of transformations is:



Finally, for string S = "BABABA" the function must return "BABABA", because no rules can be applied to string S.

Write an **efficient** algorithm for the following assumptions:

* the length of S is within the range [0..50,000];
* string S consists only of the following characters: "A", "B" and/or "C".

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#### FirstUnique

A non-empty array A consisting of N integers is given. The *unique number* is the number that occurs exactly once in array A.

For example, the following array A:

A[0] = 4 A[1] = 10 A[2] = 5 A[3] = 4 A[4] = 2 A[5] = 10

contains two unique numbers (5 and 2).

You should find the first unique number in A. In other words, find the unique number with the lowest position in A.

For above example, 5 is in second position (because A[2] = 5) and 2 is in fourth position (because A[4] = 2). So, the first unique number is 5.

Write a function:

class Solution { public int solution(int[] A); }

that, given a non-empty array A of N integers, returns the first unique number in A. The function should return −1 if there are no unique numbers in A.

For example, given:

A[0] = 1 A[1] = 4 A[2] = 3 A[3] = 3 A[4] = 1 A[5] = 2

the function should return 4. There are two unique numbers (4 and 2 occur exactly once). The first one is 4 in position 1 and the second one is 2 in position 5. The function should return 4 bacause it is unique number with the lowest position.

Given array A such that:

A[0] = 6 A[1] = 4 A[2] = 4 A[3] = 6

the function should return −1. There is no unique number in A (4 and 6 occur more than once).

Write an **efficient** algorithm for the following assumptions:

* N is an integer within the range [1..100,000];
* each element of array A is an integer within the range [0..1,000,000,000].

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#### [ThreeLetters](https://app.codility.com/programmers/trainings/5/three_letters/)

Write a function solution that, given two integers A and B, returns a string containing exactly A letters 'a' and exactly B letters 'b' with no three consecutive letters being the same (in other words, neither "aaa" nor "bbb" may occur in the returned string).

**Examples:**

1. Given A = 5 and B = 3, your function may return "aabaabab". Note that "abaabbaa" would also be a correct answer. Your function may return any correct answer.

2. Given A = 3 and B = 3, your function should return "ababab", "aababb", "abaabb" or any of several other strings.

3. Given A = 1 and B = 4, your function should return "bbabb", which is the only correct answer in this case.

Assume that:

* A and B are integers within the range [0..100];
* at least one solution exists for the given A and B.

In your solution, focus on **correctness**. The performance of your solution will not be the focus of the assessment.

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