**CSE 4404-Algorithms Lab. Winter 2022**

**Date**: March 28, 2023.

**Target Group:** A

**Topic**: Lab Test 2

**Instructions**:

* Task naming format: fullID\_L02\_T01\_A.c/CPP
* **Solutions with less efficient approaches will be considered for partial marks.**

**Task 1**

Given mixtures arranged in a row, each having a color represented by a number from to , we need to find the minimum amount of smoke generated if we were to mix all the mixtures together. To do this, we can mix adjacent mixtures at each step and replace them with the resulting mixture until there is only one mixture left. When mixing two mixtures of colors and , the resulting mixture will have the color , and the amount of smoke generated will be .

**Input**

There will be a number of test cases in the input. The first line of each test case will contain , the number of mixtures, . The second line will contain integers between and - the initial colors of the mixtures.

**Output**

For each test case, output the minimum amount of smoke.

| **Sample Input** | **Sample Output** |
| --- | --- |
| 2  18 19 | 342 |
| 3  40 60 20 | 2400 |

**Task 2**

There are N men and N women, both numbered from . For each , the compatibility of Man and Woman is given as an integer . If , then Man and Woman is compatible, else if , then Man and Woman is not compatible. You are trying to make pairs, each consisting of a man and a woman who are compatible. Here, each man and each woman must belong to exactly one pair. Find the total number of different ways you can make pairs, as this total number can be very big, output it by performing modulo .

**Input**

The input starts with an integer , the total number of men and women. Next, there will be a compatibility matrix, where the integer in the line represents the value .

**Output**

Output one integer containing the total number of ways you can make pairs, modulo .

| **Sample Input** | **Sample Output** |
| --- | --- |
| 3  0 1 1  1 0 1  1 1 1 | 3 |
| 4  0 1 0 0  0 0 0 1  1 0 0 0  0 0 1 0 | 1 |
| 1  0 | 0 |