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Google Internship 2020 \xe2\x80\x93 Google Online Challenge(1st Coding Round)

- Difficulty Level :\nMedium
- Last Updated :\n09 Sep, 2020

Recently I Got An E-mail From Google That I\xe2\x80\x99ve been selected from the Resume review round To Google\xe2\x80\x99s Online Challenge round. On the 29th Of August, I\xe2\x80\x99ve given That Challenge and face these two problems, which I want to share with all\xe2\x80\xa6

1. **A Special String:** You Are given a string S consisting of the lowercase Latin alphabet, a \xe2\x80\x93 z. Find the minimum number of characters that must be changed to make S special.

   A string S is said to be special if and only if for all (S[i], S[j]) where (1 \xe2\x89\xa4 \xc2\xa0i \xe2\x89\xa4 N/2) and (N/2 + 1 \xe2\x89\xa4 j \xe2\x89\xa4 N) one of the following condition is true:

   ```
   S[i] > S[j]\r\nS[i] < S[j]\r\nS[i] = S[j]\r\nS[i]: Represents the ith character of string S(1-based indexing)
   ```

   Input format:

   - The first line contains an integer T denoting the number of test cases
   - The first line of each case contains an integer N denoting the length of S
   - The second line of each test case contains a string S

   Output format: Print an integer denoting the minimum number of changes required for each test case in a new line.

   Constraints:

   ```
   1 \xe2\x89\xa4 T \xe2\x89\xa4 5\r\n1 \xe2\x89\xa4 N \xe2\x89\xa4 103\r\nN is Even
   ```

   Sample input:

   ```
   1\r\n6\r\naababc
   ```

   Sample output:

   ```
   2
   ```

   Explanation:

   ```
   Change S[4] = \xe2\x80\x98d\xe2\x80\x99(1 \xe2\x80\x93 based indexing)\r\nChange S[5] = \xe2\x80\x98d\xe2\x80\x99\r\
   ```

2. **A Special Matrix:** You are given an N \xc3\x97 N matrix A. The matrix consists of positive integers. In one move, you can apply the following single transformation to the matrix:

   Select an arbitrary element of the matrix and increase or decrease it by 1. Each element can be increased or decreased for any arbitrary number of times.

   A special number P is a non-negative integer for which the following quadratic equation has at least one negative integer root:

   ```
   X2 - 2 \xc3\x97 P + x = 0
   ```

   A matrix is called special if at least one of the following conditions is true:

   1. The matrix has a row with special numbers only.
   2. The matrix has a column with special numbers only.

   Your task is to count the minimum number of moves required to get special matrix A

   Input format

   - The first line contains T denoting the number of test cases.
   - The first line of each test case contains an integer N denoting the number of rows and columns.
   - Next N lines of each test case contain N integers denoting the initial matrix A.

   Output format

   For each test case, print a single integer in a new line denoting the minimum number of moves required to get a special matrix from the provided matrix. if you have already obtained a special matrix, then print 0.

   Constraints:

   ```
   1 \xe2\x89\xa4 T \xe2\x89\xa4 10\r\n1 \xe2\x89\xa4 N \xe2\x89\xa4 500  \r\n1 \xe2\x89\xa4 A[i][j] \xe2\x89\xa4 1011
   ```

   Sample input:

   ```
   1\r\n3\r\n1 2 3\r\n4 5 6\r\n7 8 9
   ```

   Sample output:

   ```
   1
   ```

   Explanation: Either the first row or third column can be modified to convert the matrix into a special matrix with a minimum number of moves. The first row can be transformed into [1,3,3] by increasing one time the second element of the first row.

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