



Home » Compete » March Challenge 2015 » Devu and his Class

Devu and his Class

Problem code: DEVCLASS



Like Share

One person likes this. Be the first of your friends.

ALL SUBMISSIONS

MY SUBMISSIONS

SUBMIT

Read problems statements in [Mandarin Chinese](#) and [Russian](#).

Devu is a class teacher of a class of n students. One day, in the morning prayer of the school, all the students of his class were standing in a line. You are given information of their arrangement by a string s . The string s consists of only letters 'B' and 'G', where 'B' represents a boy and 'G' represents a girl.

Devu wants inter-gender interaction among his class should to be maximum. So he does not like seeing two or more boys/girls standing nearby (i.e. continuous) in the line. e.g. he does not like the arrangements **BBG** and **GBB**, but he likes **BG**, **GBG** etc.

Now by seeing the initial arrangement s of students, Devu may get furious and now he wants to change this arrangement into a likable arrangement. For achieving that, he can swap positions of any two students (not necessary continuous). Let the cost of swapping people from position i with position j ($i \neq j$) be $c(i, j)$. You are provided an integer variable **type**, then the cost of the swap will be defined by $c(i, j) = |j - i|^{\text{type}}$.

Please help Devu in finding minimum cost of swaps needed to convert the current arrangement into a likable one.

Input

The first line of input contains an integer T , denoting the number of test cases. Then T test cases are follow.

The first line of each test case contains an integer **type**, denoting the type of the cost function. Then the next line contains string s of length n , denoting the initial arrangement s of students.

Note that the integer n is not given explicitly in input.

Output

For each test case, print a single line containing the answer of the test case, that is, the minimum cost to convert the current arrangement into a likable one. If it is not possible to convert the current arrangement into a likable one, then print -1 instead of the minimum cost.

Constraints and Subtasks

Subtask 1: 25 points

- $1 \leq T \leq 10^5$
- $1 \leq n \leq 10^5$
- type** = 0
- Sum of n over all the test cases in one test file does not exceed 10^6 .

Subtask 2: 25 points

- $1 \leq T \leq 10^5$
- $1 \leq n \leq 10^5$
- type** = 1
- Sum of n over all the test cases in one test file does not exceed 10^6 .

Subtask 3: 25 points

- $1 \leq T \leq 10^5$
- $1 \leq n \leq 10^5$
- type** = 2
- Sum of n over all the test cases in one test file does not exceed 10^6 .

Subtask 4: 25 points

- $1 \leq T \leq 10^2$
- $1 \leq n \leq 10^3$
- type** can be 0, 1 or 2, that is **type** $\in \{0, 1, 2\}$.

Example

Input:

SUCCESSFUL SUBMISSIONS

User	Score	Mem	Lang	Solution
jicotillo	100.000	0.4M	PAS fpc	View
majik	100.000	2M	C	View
rrahul_19	100.000	2M	C	View
sergej_t	100.000	2.1M	C	View
gvaibhav21	100.000	2.2M	C	View
nanaya	100.000	2.7M	C++ 4.3.2	View
tthung1997	100.000	2.7M	C++ 4.3.2	View
aj5774	100.000	2.7M	C++ 4.3.2	View
igcstar	100.000	2.7M	C++ 4.3.2	View
achiever202	100.000	2.8M	C++ 4.3.2	View
ryanign	100.000	2.8M	C++ 4.3.2	View
akhil_algo_10	100.000	2.8M	C++ 4.3.2	View

1 of 32

Next »

```

8
0
BB
0
BG
0
BBGG
1
BGG
1
BGGB
1
BBBG
2
BBGG
2
BGB

```

Output:

```

-1
0
1
1
1
3
1
0

```

Explanation

Note **type** of the first 3 test cases is 0. So $c(i, j) = 1$. Hence we just have to count minimum number of swaps needed.

Example case 1. There is no way to make sure that both the boys does not stand nearby. So answer is -1.

Example case 2. Arrangement is already valid. No swap is needed. So answer is 0.

Example case 3. Swap boy at position 1 with girl at position 2. After swap the arrangement will be **BGBG** which is a valid arrangement. So answer is 1.

Now **type** of the next 3 test cases is 1. So $c(i, j) = |j - i|$, that is, the absolute value of the difference between i and j .

Example case 4. Swap boy at position 0 with girl at position 1. After swap the arrangement will be **GBG** which is a valid arrangement. So answer is $|1 - 0| = 1$.

Example case 5. Swap boy at position 0 with girl at position 1. After swap the arrangement will be **GBGB** which is a valid arrangement. So answer is $|1 - 0| = 1$.

Example case 6. Swap boy at position 1 with girl at position 4. After swap the arrangement will be **BGBGB** which is a valid arrangement. So answer is $|4 - 1| = 3$.

Then **type** of the last 2 test cases is 2. So $c(i, j) = (j - i)^2$

Example case 7. Swap boy at position 1 with girl at position 2. After swap the arrangement will be **BGBG** which is a valid arrangement. So answer is $(2 - 1)^2 = 1$.

Example case 8. Arrangement is already valid. No swap is needed. So answer is 0.

Author: admin2

Tester: laycourse

Date Added: 23-12-2014

Time Limit: 2 sec

Source Limit: 50000 Bytes

Languages: ADA, ASM, BASH, BF, C, C99 strict, CAML, CLOJ, CLPS, CPP 4.3.2, CPP 4.9.2, CPP14, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYTH, PYTH 3.1.2, RUBY, SCALA, SCM guile, SCM qobi, ST, TCL, TEXT, WSPC

SUBMIT

Comments

grebnesieh @ 6 Mar 2015 08:19 PM

Great question. :)

code_hard123 @ 6 Mar 2015 10:02 PM

how many times swapping can be done?

shivam_isc @ 7 Mar 2015 03:20 AM

is there necessarily only one swap required? or there can be more? (i mean if only one pair can be swapped or even more ?)

laycurse @ 7 Mar 2015 03:50 AM

@code_hard123 @shivam_isc You can swap any number of times. Just minimize the total cost of swaps.

dhanna89 @ 7 Mar 2015 09:58 AM

In the 4th subtask ,type will be provided or we can choose anyone of the type for minimizing our cost function ?

dpraveen @ 7 Mar 2015 10:47 AM

@dhanna89: Type will be provided to you. Every subtask will be following the pattern written in the input section. So for each test case, you can have separate value of type which can take values 0, 1 or 2.

dpraveen @ 7 Mar 2015 10:48 AM

@dhanna89: Type will be provided to you. Every subtask will be following the pattern written in the input section. So for each test case, you will be given a value of type which can be 0, 1 or 2.

iheey @ 7 Mar 2015 02:57 PM

can two girl stand near? or only two boy can not stand near?

dpraveen @ 7 Mar 2015 03:12 PM

@iheey: Neither two or more boys nor girls should stand together. Devu is gender unbiased :)

p00r @ 7 Mar 2015 05:26 PM

Nice Problem! (Y)

dpraveen @ 7 Mar 2015 07:44 PM

@manjeet24feb: Problem statement makes this thing very clear. Please read it again.

dpraveen @ 7 Mar 2015 07:44 PM

@manjeet24feb: Please don't ask for hints in a live contest.

ashish1610 @ 7 Mar 2015 09:57 PM

Nice question and nice types :P

sudarshanabcd @ 8 Mar 2015 05:22 AM

type can be negative ?

dpraveen @ 8 Mar 2015 01:13 PM

@sudarshanabcd: No, Please see constraints. It is said that type can be either 0, 1 or 2.

dpraveen @ 8 Mar 2015 01:14 PM

@addygarg24: Please figure out reason yourself. Try more cases.

Need help? Post a comment. But before that please spare a moment to read the guidelines.

Your name:
shubhmsng

Comment: *

Save

[CodeChef is a non-commercial competitive programming community](#)

[About CodeChef](#) | [About Directi](#) | [CEO's Corner](#) | [C-Programming](#) | [Programming Languages](#) | [Contact Us](#)

© 2009 Directi Group. All Rights Reserved. CodeChef uses SPOJ © by Sphere Research Labs
In order to report copyright violations of any kind, send in an email to copyright@codechef.com

Directi
Intelligent People. Uncommon Ideas.

The time now is: 06:04:04 PM
Your Ip: 1.187.231.192

CodeChef - A Platform for Aspiring Programmers

CodeChef was created as a platform to help programmers make it big in the world of algorithms, **computer programming** and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and another smaller programming challenge in the middle of the month. We also aim to have training sessions and discussions related to **algorithms**, **binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

Practice Section - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in a language of your choice. Our **programming contest** judge accepts solutions in over 35+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

Compete - Monthly Programming Contests and Cook-offs

Here is where you can show off your **computer programming** skills. Take part in our 10 day long monthly **coding contest** and the shorter format Cook-off **coding contest**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), \$700 (for Global Community) and lots more CodeChef goodies up for grabs.

Programming Tools

[Online IDE](#)

[Upcoming Coding Contests](#)

[Contest Hosting](#)

[Problem Setting](#)

[CodeChef Tutorials](#)

[CodeChef Wiki](#)

Practice Problems

[Easy](#)

[Medium](#)

[Hard](#)

[Challenge](#)

[Peer](#)

[School](#)

[FAQ's](#)

Initiatives

[Go for Gold](#)

[CodeChef for Schools](#)

[Campus Chapters](#)