

Minimum Cost To Make String Valid

Problem Statement

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Ninja has been given a string 'STR' containing either '{' or '}'. 'STR' is called valid if all the brackets are balanced. Formally for each opening bracket, there must be a closing bracket right to it.

For Example:

`"{}{}"`, `"{{{}}}"`, `"{{{}}}"` are valid strings while `"{}{}"`, `"{}{}{}"`, `"{}{}{}{"` are not valid strings.

Ninja wants to make 'STR' valid by performing some operations on it. In one operation, he can convert '{' into '}' or vice versa, and the cost of one such operation is 1.

Your task is to help Ninja determine the minimum cost to make 'STR' valid.

For Example:

Minimum operations to make 'STR' = `"{}"` valid is 1.

In one operation, we can convert '{' at index '1' (0-based indexing) to '}'. The 'STR' now becomes "{}" which is a valid string.

Note:

Return -1 if it is impossible to make 'STR' valid.

Detailed explanation (Input/output format, Notes, Images)



Constraints :

$1 \leq T \leq 100$
 $0 \leq |STR| \leq 10^5$
 $STR[i] = \{'\}' \text{ or } \{'\}'$

Time Limit: 1 sec

Sample Input 1:

```
2
{{{}
{{}}{}}
```

Sample Output 1:

```
1
0
```

Explanation For Sample Input 1:

For the first test case:
The two valid strings that can be obtained from 'STR' using minimum operations "{{\$}" and "{}}". Ninja can transform 'STR' to "{{\$}" by performing the following operations:
Convert '{' at index 2 to '}'.

Ninja can transform 'STR' to "{}}" by performing the following operations:

Convert '{' at index 1 to '}'.

The minimum number of operations in transforming 'STR' to either of the two valid strings is 1. So, the total cost is 1.

For the second test case:
Given 'STR' is already valid so the minimum number of operations required is 0.
So, the total cost is 0.

Sample Input 2:

```
3
{} }{}
{{{
{{{}}
```

Sample Output 2:

```
1
2
-1
```