1. **Sock Merchant**

John works at a clothing store. He has a large pile of socks that he must pair by color for sale. Given an array of integers representing the color of each sock, determine how many pairs of socks with matching colors there are. For example, there are socks with colors . There is one pair of color and one of color . There are three odd socks left, one of each color. The number of pairs is .

Sample Input

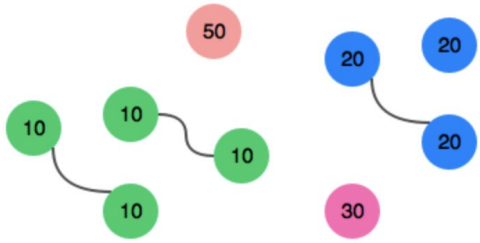
9

10 20 20 10 10 30 50 10 20

Sample Output

3

Explanation



John can match three pairs of socks.

```
function sockMerchant(n, ar) {
    let count = 0

    ar.sort()
    // 10 10 10 10 20 20 20 30 50 sort and then if true increment and i+2
    for(let i=0; i<n ;i++){
        if(ar[i]==ar[i+1]){
            i++
            count++
        }
          }

          return count
      }
```

2. Counting Valley

Gary is an avid hiker. He tracks his hikes meticulously, paying close attention to small details like topography. During his last hike he took exactly steps. For every step he took, he noted if it was an uphill, , or a downhill, step. Gary's hikes start and end at sea level and each step up or down represents a unit change in altitude. We define the following terms:

- A mountain is a sequence of consecutive steps above sea level, starting with a step up from sea level and ending with a step down to sea level.
- A valley is a sequence of consecutive steps below sea level, starting with a step down from sea level and ending with a step up to sea level.

Given Gary's sequence of up and down steps during his last hike, find and print the number of valleys he walked through.

For example, if Gary's path is , he first enters a valley units deep. Then he climbs out an up onto a mountain units high. Finally, he returns to sea level and ends his hike.

Input Format

The first line contains an integer n, the number of steps in Gary's hike.
The second line contains a single string s, of n characters that describe his path.

Constraints

- $2 \leq n \leq 10^6$
- $s[i] \in \{UD\}$

Output Format

Print a single integer that denotes the number of valleys Gary walked through during his hike.

Sample Input

```
8
UDDDUDUU
```

Sample Output

```
1
```

Explanation

If we represent _ as sea level, a step up as /, and a step down as \, Gary's hike can be drawn as:

```
_/\      _
   \    /
    \/\/
```

He enters and leaves one valley.

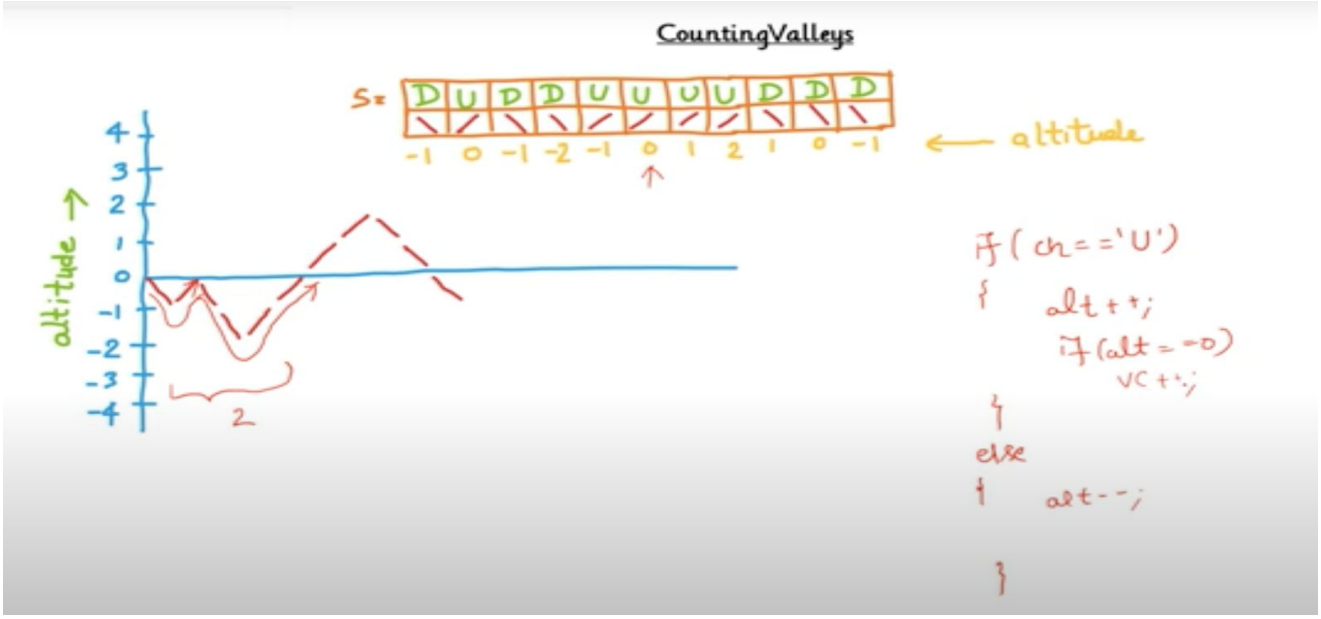
```
function countingValleys(n, inputString) {
let altitude = 0,
   valley = 0

for (let i = 0; i < inputString.length; i++) {

    if (inputString[i].toUpperCase() == 'U') {
        altitude++

        if (altitude == 0)
            valley++

    } else {
        altitude--
    }
}
return valley
}
```



3. Jumping on the Clouds

Emma is playing a new mobile game that starts with consecutively numbered clouds. Some of the clouds are thunderheads and others are cumulus. She can jump on any cumulus cloud having a number that is equal to the number of the current cloud plus or . She must avoid the thunderheads. Determine the minimum number of jumps it will take Emma to jump from her starting postion to the last cloud. It is always possible to win the game.

For each game, Emma will get an array of clouds numbered if they are safe or if they must be avoided. For example, indexed from . The number on each cloud is its index in the list so she must avoid the clouds at indexes and . She could follow the following two paths: or . The first path takes jumps while the second takes .

Sample Input 0

```
7
0 0 1 0 0 1 0
```

Sample Output 0

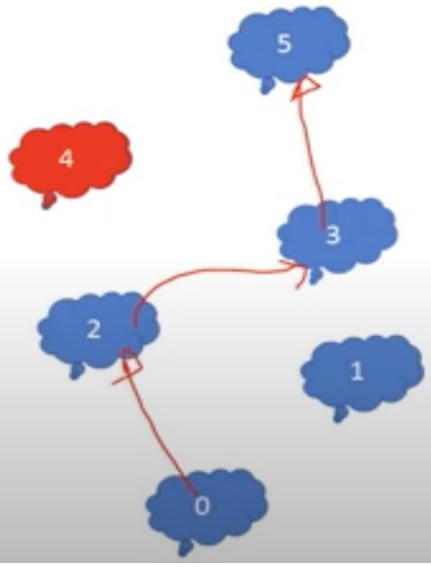
```
4
```

Sample Input 1

```
6
0 0 0 0 1 0
```

Sample Output 1

```
3
```



- Number of Clouds : 6

Cloud No	0	1	2	3	4	5
Type of Cloud	0	0	0	0	1	0

Jump	Cloud No
1	2
2	3
3	5

```
function testing(c) {

   let steps = 0

   for (let i = 0; i < c.length - 1;) {
       if (c[i + 2] != 1) {
           steps++
           i += 2
       } else {
           steps++
           i++
       }
   }
   return steps
}

testing([0, 0, 1, 0, 0, 1, 0])
```

4. Lilah has a string, , of lowercase English letters that she repeated infinitely many times. Given an integer, , find and print the number of letter a's in the first letters of Lilah's infinite string.

For example, if the string and , the substring we consider is , the first characters of her infinite string. There are occurrences of a in the substring.

Function Description

Complete the *repeatedString* function in the editor below. It should return an integer representing the number of occurrences of a in the prefix of length in the infinitely repeating string.

repeatedString has the following parameter(s):

- *s*: a string to repeat
- *n*: the number of characters to consider

Sample Input 0

```
aba
10
```

Sample Output 0

```
7
```

abaabaabaa - count of a is 7

Sample Input 1

```
a
1000000000000
```

Sample Output 1

1000000000000

```
function repeatedString(s, n) {
 let count_1 = (s.match(/a/g) || []).length; // will match all get count of "a"
in inputString("aba")
 let count_2 = Math.floor(n / s.length); //will get quotient

 let count = count_1 * count_2;
 //calculating remainder part
 let remainder = n % s.length;
 //will substring and match if "a" then will get length and add to result
 let remainderCount = (s.substring(0, remainder).match(/a/g) || []).length;

 return count + remainderCount;
}
```