# Separate the chocolate



Chinese Version Russian Version

Tom and Derpina have a rectangular shaped chocolate bar with chocolates labeled T, D and U. They want to split the bar into exactly two pieces such that:

- Tom's piece can not contain any chocolate labeled D and similarly, Derpina's piece can not contain any chocolate labeled T and U can be used by either of the two.
- All chocolates in each piece must be connected (two chocolates are connected if they share an edge), i.e. the chocolates should form one connected component
- The absolute difference between the number of chocolates in pieces should be at most K
- After dividing it into exactly two pieces, in any piece, there should not be 4 adjacent chocolates that form a square, i.e. there should not be a fragment like this:
  XX
  XX

# **Input Format**

The first line of the input contains 3 integers M, N and K separated by a single space. M lines follow, each of which contains N characters. Each character is 'T','D' or 'U'.

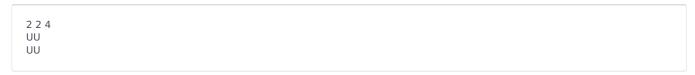
#### **Constraints**

 $0 \le M, N \le 8$  $0 \le K \le M * N$ 

### **Output Format**

A single line containing the number of ways to divide the chocolate bar.

### **Sample Input**



### **Sample Output**

12

## **Explanation**

**Note:** In the explanation T and D are used to represent, which parts belong to Tom and Derpina respectively. There are  $2^4 = 16$  possible separations. The 4 invalid are:

П				
DD DD				
DT TD				
TD DT				

Some of the valid ones are:								
	D D							
	T DD							
	DD T							
	DT DT							