

Choosing White Balls



There are n balls in a row, and each ball is either *black* (**B**) or *white* (**W**). Perform k removal operations with the goal of *maximizing the number of white balls picked*. For each operation i (where $1 \leq i \leq k$):

1. Choose an integer, x_i , uniformly and independently from 1 to $n - i + 1$ (inclusive).
2. Remove the x_i^{th} ball from either the left end or right end of the row, which decrements the number of available balls in the row by 1 . You can choose to remove the ball from whichever end in each step maximizing the expected total number of white balls picked at the end.

Given a string describing the initial row of balls as a sequence of n **W**'s and **B**'s, find and print the **expected** number of *white* balls providing that you make all choices optimally. A correct answer has an *absolute error of at most* 10^{-6} .

Input Format

The first line contains two space-separated integers describing the respective values of n (the number of balls) and k (the number of operations).

The second line describes the initial sequence balls as a single string of n characters; each character is either **B** or **W** and describes a *black* or *white* ball, respectively.

Constraints

- $1 \leq k \leq n < 30$

Output Format

Print a single floating-point number denoting the expected number of *white* balls picked. Your answer is considered to be correct if it has an *absolute error of at most* 10^{-6} .

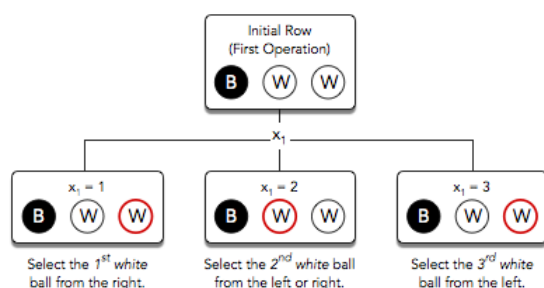
Sample Input 0

```
3 1
BWV
```

Sample Output 0

```
1.0000000000
```

Explanation 0



Independent of your choice of x , one *white* ball will always be picked so the expected number of *white* balls chosen after $k = 1$ operation is **1**. Thus, we print **1** as our answer.

Sample Input 1

```
4 2
WBWB
```

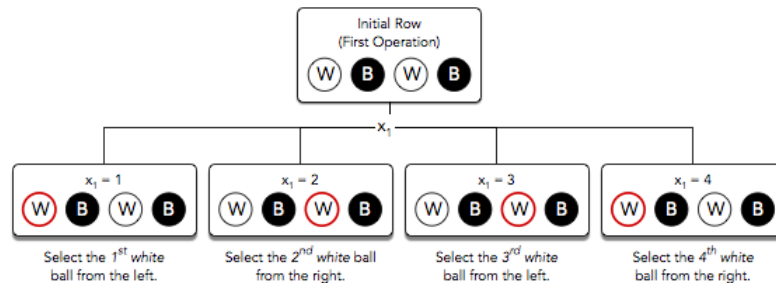
Sample Output 1

1.5000000000

Explanation 1

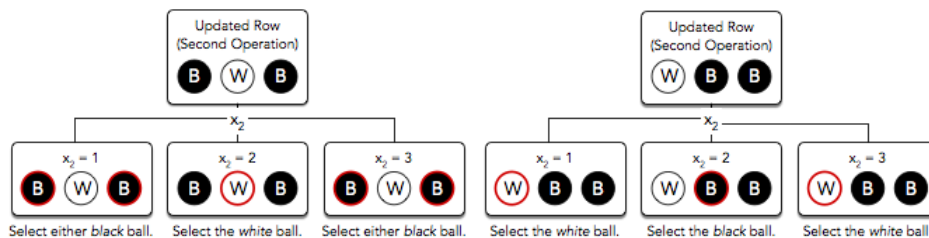
We perform the following $k = 2$ operations:

1.



Independent of your choice of x , a *white* ball will always be chosen during the first operation (meaning the expected number of *white* balls in the first operation is 1).

2.



For the second operation, there are 2 possible row orderings (depending on which ball was picked during the first operation). In the first possible row ordering, the probability of picking a *white* ball is $\frac{1}{3}$. In the second possible row ordering, the probability of picking a *white* ball is $\frac{2}{3}$. This means the expected number of *white* balls chosen in the second operation is $\frac{1}{2} \cdot \frac{1}{3} + \frac{1}{2} \cdot \frac{2}{3} = \frac{1}{2}$.

After performing all $k = 2$ operations, we print the total expected number of *white* balls chosen, which is $1 + \frac{1}{2} = 1.5$.