Nice Bouquets

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

The Universal Tropical Plant Center (UTPC) owns a plantation where N trees are planted in a straight line from west to east, numbered from 1 to N starting from the west.

The plantation is about to enter a K-day harvest period. During this period, each tree will bloom exactly one flower per day, in one of three colors: red, green, or blue. The blooming schedule of the i-th tree over the K days is represented by a string S_i, where the j-th character $S_{i,j}$ indicates the color of the flower that blooms on the j-th day: 'R' for red, 'G' for green, and 'B' for blue.

Each day, all flowers that have bloomed are harvested and grouped into bouquets of three flowers each. A valid bouquet must consist of either all flowers of the same color or all of different colors. Ideally, the harvested flowers should be grouped into such bouquets without any leftovers. However, it may not always be possible to do so.

To address this, UTPC allows the following operations to be performed on the trees **before** the harvest period begins. Each operation can be performed any number of times, but no tree can be operated on more than once:

- Choose an integer i ($1 \leq i \leq N$) and cut down the i-th tree. No flowers will be harvested from this tree.
- Choose an integer i ($1 \leq i \leq N$) and apply a growth accelerator to the i-th tree. The tree will bloom two flowers each day for the period, both of the color indicated by $S_{i,j}$ on the j-th day.

Operations cannot be performed after the harvest period begins.

Since UTPC's office is located on the western edge of the plantation, it prefers not to operate on trees that are further east. Therefore, the **cost** of a set of operations is defined as the **index of the easternmost tree that is operated on**. If no trees are operated on, the cost is 0.

Determine the minimum possible cost needed to ensure that, on every day of the harvest period, all flowers can be grouped into valid bouquets without any leftovers. Note that if all trees are cut down, it is considered that there are no leftover flowers.

Input

The input is given in the following format:

N K
S_1
S_2
$\vdots$
S_N

- N and K are integers.
- $1 \leq N, K$.
- $NK \leq 10^5$.
- $|S_i| = K$.
- Each character in S_i is one of 'R', 'G', or 'B'.

Output

Print a single integer — the minimum cost to ensure no flowers are left ungrouped on any day of the harvest period.

Examples

standard input	standard output
4 5 RGBGR BGGBR RBGBR RRRRR	2
3 3 RGB BGG GGR	0
3 4 GGGG BGGG GGGR	3
6 4 BGGB BGGB RGBG RRRR GGGG BBBB	3

Note

In the first example, by cutting down the second tree, the flowers that bloom are:

- Day 1: RRR
- Day 2: GBR
- Day 3: BGR
- Day 4: GBR
- Day 5: RRR

Bouquets can be formed without leftovers on each day. The cost is 2, and it is not possible to achieve the goal with cost 1.

In the second example, no operations are necessary, so the cost is 0.

In the third example, all trees must be cut down to satisfy the condition. The cost is 3.

In the fourth example, by applying a growth accelerator to tree 1 and cutting down tree 3, the daily blooms become:

- Day 1: BBBRGB
- Day 2: GGGRGB
- Day 3: GGGRGB

- Day 4: BBBRGB

These can all be grouped into valid bouquets. The cost is 3.