C. Color Stripe

A colored stripe is represented by a horizontal row of n square cells, each cell is pained one of k colors. Your task is to repaint the minimum number of cells so that no two neighbouring cells are of the same color. You can use any color from 1 to k to repaint the cells.

Input

The first input line contains two integers n and k ($1 \le n \le 5 \cdot 10^5$; $2 \le k \le 26$). The second line contains n uppercase English letters. Letter "A" stands for the first color, letter "B" stands for the second color and so on. The first k English letters may be used. Each letter represents the color of the corresponding cell of the stripe.

Output

Print a single integer — the required minimum number of repaintings. In the second line print any possible variant of the repainted stripe.

Examples

input

```
6 3
ABBACC
```

output

```
2
ABCACA
```

input

```
3 2
BBB
```

output

```
1
BAB
```