Problem B
Counting s-car

Time Limit: 1 seconds
Memory Limit: 256 Megabytes

At the Cabin coffee there is a car park. It has ***N*** slots for cars to get in, then park in and finally get out. The car park can be represented as ***N*** bits. One bit is either **1** or **0**. We assume that a bit **0** stands for "That slot is free" and bit **1** stands for "There is a car occupying that slot". For example, when the car park has **3** slots, the binary representation can be written as one of the followings:

{0 0 0}, {0 0 1}, {0 1 0}, {0 1 1}, {1 0 0}, {1 0 1}, {1 1 0}, {1 1 1}

After a period of time, the state of the car park can be different. However, both of them (the original state and the state after a period of time) are still binary representation.

Long is currently a security guard at Cabin coffee. His task is to check the number of cars from **the early morning** till **midnight**, which means he has to watch the state of the car park hourly. One day, his girlfriend interrupted Long when he was on duty, which left his jobs uncompleted.

Luckily, he has two states of the car park:

1. First state: in the early morning (because he had seen the camera before his girlfriend's interruption).
2. Second state: at midnight (when he returned to finalize his job after interruption).

This miserable security guard wants you to find the minimum and maximum number of cars **after** early morning (exclude the first state) till midnight (include the second state) such that there are at most **K** cars visiting each slot in the car park on that day.

Input

The first line contains 2 integers N and K ($1 \leqslant N, K \leqslant 10^5$) denoting the number of slots in the car park and the maximum number of cars for each slot.

The second line is N separated bits describing the state of the car park in the early morning. The last one is N separated bits describing the state of the car park at midnight.

Output

Print one line contains two numbers denoting the minimum and maximum number of cars in the mentioned period of time.

Examples

Input
3 1 1 0 1 1 0 1
Output
0 1

Input
6 3 1 0 1 0 1 1 0 1 0 1 0 1
Output
2 14

Note

In the first example, there are two cars parking in slot **1** and **3** in the early morning. Till midnight, slot **1** and **3** remain unchanged. In case minimum. There is no car entering slot **2** and **4**. So the minimum number of cars is **0**. In contrast, there may be one car that gets in slot **2** and gets out in the afternoon. Hence, after early morning, the maximum number of cars is **1**.

The second one, the minimum number of cars is **2** due to the appearance of two cars at slot **2** at **4** at midnight. In case maximum, slot **2** and **4** totally achieve **6** cars while the rest achieve **8**.