Most Occurrence

Problem Description

Given a string **S** of length **n** and **q** queries. In each query, You have to find out which character occur most of the time in a given range(L, R). If there are several answers, you have to find out the lexicographically smallest letter.

Input

The first line will contain two integers n, q ($1 \le n \le 10^5$, $1 \le q \le 10^5$), the length of the string and the number of queries respectively. The next line contains the string S.

Next q lines will contain two integers L & R.

Output

For each query, find out the most occurrence character & the occurrence times. If there are several answers, you have to find out the lexicographically smallest character.

Example

Input

13 5

abbacccdefgha

1 13

1 10

3 6

11 12

8 12

Output

a 3

c 3

c 2

g 1

d 1