TCCC '23 Nov P4 - Special Sequential Letter Sequences

Time Limit: 2.0s   **Memory Limit:** 256M

A sequence of letters is called a word. A sequence of letters is considered special if all the characters within the word are unique (There are no duplicate letters).

Given a sequence of letters S and Q queries, for each query, determine the number of possible Special Sequences that can be created using all the unique characters between index L and R (inclusive) of string S.

Input Specification

The first line will consist of two integers $|S|$ $(1 \leq |S| \leq 10^5)$ and Q $(1 \leq Q \leq 10^5)$, the length of string S and the number of queries.
The next line will contain a single string S of length $|S|$ consisting of uppercase characters between A to Z.
The last Q lines will consist of 2 integers, L_i and R_i $(1 \leq L_i, R_i, \leq |S|)$, representing a query using characters between L and R (inclusive) of string S.

Output Specification

For each query Q, output the number of possible Special Sequences using characters between the Lth and Rth character of string S mod 100000007

Subtasks

Subtask 1 [10%]:

- $1 \leq |S| \leq 10$
- $Q = 1$

Subtask 2 [20%]:

- $1 \leq Q \leq 10$

Subtask 3 [70%]:

- No further constraints

Sample Input 1

```
3 1
XYZ
1 3
```

Sample Output 1

```
6
```

Explanation for Sample Output 1

There are a total of 6 unique Special Sequences using characters between indices `1` and `3` :
`XYZ` , `XZY` , `YXZ` , `YZX` , `ZXY` , `ZYX` .

Sample Input 2

```
9 4
SSSUUUSSS
1 3
3 4
4 6
1 9
```

Sample Output 2

```
1
2
1
2
```

Explanation of Sample Output 2

The only possible Special Sequence using characters between indices `1` and `3` is `S` .
The two characters between `3` and `4` are `S` and `U` , the only possible Special Sequences are `SU` and `US`
The only possible Special Sequence using characters between indices `4` and `6` is `U` .
The two characters unique characters between `1` and `10` are `S` and `U` , the only possible Special Sequences are `SU` and `US`

Sample Input 3

```
26 1
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1 26
```

Sample Output 3

```
49626704
```

Explanation for Sample Output 3

Make sure to output your answer $mod\ 100000007$.