

Insect Blending

Winter Workshops, Day 3, Available memory 256 MB

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Insect biodiversity accounts for a large proportion of all biodiversity on the planet. Over half of the estimated 1.5 million organism species described are classified as insects. Some studies estimate that global insect populations are in rapid decline, perhaps by as much as 80% in recent decades. While biodiversity loss is a global problem, conserving habitat for species of insects is uncommon and generally of low priority¹.

In this problem, scientists are interested in creating more species of insects to increase biodiversity. To do so, they can take a DNA string and reverse any segment. Given a string s of length n made of lowercase latin letters representing a DNA string, you have to answer m queries of the form "How many different strings can be made by reversing no more than one segment within the interval of characters $[a_i, b_i]$?".

For example, given the string MeetIT and the interval $[2, 4]$ (highlighted in green), you could make these strings:

Word	Operation
MeetIT	Without reversing
MeteIT	Reversing segment $[3, 4]$
MteeIT	Reversing segment $[2, 4]$

Constraints

- $1 \leq n, m \leq 10^5$
- $1 \leq a_i \leq b_i \leq n$
- MeetIT is ugly without capital letters, but s really contains lowercase English letters only.
- All the other input values are integers.

Input

```

n m
s
a1 b1
a2 b2
...
am bm

```

Output

Print m lines with the answer for each query.

¹More at [Wikipedia](#)

Example

Input	Output
6 3 meetit 2 4 1 6 2 2	3 14 1
10 10 ababbbbabb 1 10 1 5 6 8 4 6 2 2 5 10 7 10 4 6 2 8 3 9	22 7 3 1 1 6 4 1 11 11

Scoring

Subtask	Constraints	Points
1	all queries are of the form $[1, n]$	60
2	no additional constraints	40