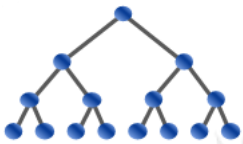
USA Computing Olympiad



USACO 2024 December Contest, Platinum
Problem 2. It's Mooin' Time

Contest has ended.

Log in to allow submissions in analysis mode

English (en)

****Note: The time limit for this problem is 3s, 1.5x the default.****

Bessie has a string of length N ($1 \leq N \leq 3 \cdot 10^5$) consisting solely of the characters M and O. For each position i of the string, there is a cost c_i to change the character at that position to the other character ($1 \leq c_i \leq 10^8$).

Bessie thinks the string will look better if it contains more moos of length L ($1 \leq L \leq \min(N, 3)$). A moo of length L is an M followed by $L-1$ Os.

For each positive integer k from 1 to $\lfloor N/L \rfloor$ inclusive, compute the minimum cost to change the string to contain at least k substrings equal to a moo of length L.

INPUT FORMAT (input arrives from the terminal / stdin):

The first line contains L and N.

The next line contains Bessie's length-N string, consisting solely of Ms and Os.

The next line contains space-separated integers $c_1 \ldots c_N$.

OUTPUT FORMAT (print output to the terminal / stdout):

Output $\lfloor N/L \rfloor$ lines, the answer for each k in increasing order.

SAMPLE INPUT:

```
1 4
MOOO
10 20 30 40
```

SAMPLE OUTPUT:

```
0
20
50
90
```

SAMPLE INPUT:

```
3 4
OOOO
50 40 30 20
```

SAMPLE OUTPUT:

```
40
```

SAMPLE INPUT:

```
2 20
OOOMOMOOOMOOOMMMOMOO
44743602 39649528 94028117 50811780 97338107 30426846 94909807 22669835 78498782 18004278 16633124 24711234 90542888 38490759 12851185
```

SAMPLE OUTPUT:

```
0
0
0
0
0
12851185
35521020
60232254
99881782
952304708
```

SAMPLE INPUT:

```
3 20
OOOMOMOOOMOOOMMMOMOO
44743602 39649528 94028117 50811780 97338107 30426846 94909807 22669835 78498782 18004278 16633124 24711234 90542888 38490759 12851185
```

SAMPLE OUTPUT:

```
0
0
0
44743602
```

119332891
207066974

SCORING:

- Input 5: $L = 3, N \leq 5000$
- Input 6: $L = 1$
- Inputs 7-10: $L = 2$
- Inputs 11-18: $L = 3$

Problem credits: Benjamin Qi

Contest has ended. No further submissions allowed.