

3443. Maximum Manhattan Distance After K Changes

Solved ●

Medium Topics Hint

You are given a string `s` consisting of the characters 'N', 'S', 'E', and 'W', where `s[i]` indicates movements in an infinite grid:

- 'N' : Move north by 1 unit.
- 'S' : Move south by 1 unit.
- 'E' : Move east by 1 unit.
- 'W' : Move west by 1 unit.

Initially, you are at the origin $(0, 0)$. You can change **at most** `k` characters to any of the four directions.

Find the **maximum Manhattan distance** from the origin that can be achieved **at any time** while performing the movements **in order**.

The **Manhattan Distance** between two cells (x_i, y_i) and (x_j, y_j) is $|x_i - x_j| + |y_i - y_j|$.

Example 1:

Input: `s = "NWSE"`, `k = 1`

Output: 3

Explanation:

Change `s[2]` from 'S' to 'N'. The string `s` becomes "NWNE".

Movement	Position (x, y)	Manhattan Distance	Maximum
<code>s[0] == 'N'</code>	(0, 1)	$0 + 1 = 1$	1
<code>s[1] == 'W'</code>	(-1, 1)	$1 + 1 = 2$	2
<code>s[2] == 'N'</code>	(-1, 2)	$1 + 2 = 3$	3
<code>s[3] == 'E'</code>	(0, 2)	$0 + 2 = 2$	3

The maximum Manhattan distance from the origin that can be achieved is 3. Hence, 3 is the output.

Example 2:

Input: `s = "NSWWEW"`, `k = 3`

Output: 6

Explanation:

Change `s[1]` from 'S' to 'N', and `s[4]` from 'E' to 'W'. The string `s` becomes "NNWWWW".

The maximum Manhattan distance from the origin that can be achieved is 6. Hence, 6 is the output.

Constraints:

- $1 \leq s.length \leq 10^5$
- $0 \leq k \leq s.length$
- `s` consists of only 'N', 'S', 'E', and 'W'.

Seen this question in a real interview before? 1/5

Yes No

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