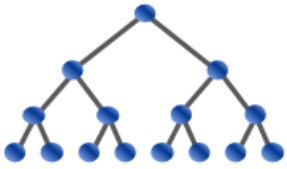
USA Computing Olympiad



USACO 2023 DECEMBER CONTEST, SILV
PROBLEM 3. TARGET PRACTICE

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Contest has ended.

Log in to allow submissions in analysis mode

English (en)

Bessie is a robovine, also known as a cowborg. She is on a number line trying to shoot a series of T ($1 \leq T \leq 10^5$) targets located at distinct positions. Bessie starts at position 0 and follows a string of C ($1 \leq C \leq 10^5$) commands, each one of L, F, or R:

- L: Bessie moves one unit to the left.
- R: Bessie moves one unit to the right.
- F: Bessie fires. If there is a target at Bessie's current position, it is hit and destroyed, and cannot be hit again.

If you are allowed to change up to one command in the string to a different command before Bessie starts following it, what is the maximum number of targets that Bessie can hit?

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

The first line contains T and C.

The next line contains the locations of the T targets, distinct integers in the range $[-C, C]$.

The next line contains the command string of length C, containing only the characters F, L, and R.

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

Print the maximum number of targets that Bessie can hit after changing up to one command in the string.

SAMPLE INPUT:

```
3 7
0 -1 1
LFFRFRR
```

SAMPLE OUTPUT:

```
3
```

If you make no changes to the string, Bessie will hit two targets:

```
Command | Position | Total Targets Hit
--------+----------+------------------
Start   |  0       | 0
L       | -1       | 0
F       | -1       | 1
F       | -1       | 1 (can't destroy target more than once)
R       |  0       | 1
F       |  0       | 2
R       |  1       | 2
R       |  2       | 2
```

If you change the last command from R to F, Bessie will hit all three targets:

```
Command | Position | Total Targets Hit
--------+----------+------------------
Start   |  0       | 0
L       | -1       | 0
F       | -1       | 1
F       | -1       | 1 (can't destroy target more than once)
R       |  0       | 1
F       |  0       | 2

R       |  1       | 2
F       |  1       | 3
```

SAMPLE INPUT:

```
1 5
```

```
0
FFFFF
```

SAMPLE OUTPUT:

```
1
```

If the commands are left unchanged, the only target at 0 will be destroyed. Since a target cannot be destroyed multiple times, the answer is 1.

SAMPLE INPUT:

```
5 6
1 2 3 4 5
FFRFRF
```

SAMPLE OUTPUT:

```
3
```

SCORING:

- Inputs 4-6: $T, C \leq 1000$
- Inputs 7-15: No additional constraints.

Problem credits: Suhas Nagar

Contest has ended. No further submissions allowed.