

MWC '15 #7 P3: Blue and Green

Time limit: 2.5s **Memory limit:** 16M

Blue and Green is a fictitious sandbox game where you have a line of blue and green marbles. There exists a currency in this game, which you can use to change the assortment of marbles. Each move has its own cost. The following moves are:

- set the colour of a single marble at a cost of S
- rotate all the marbles to the left by 1 (the left-most marble moves to the right end, and everything else moves one place to the left) at a cost of L
- rotate all the marbles to the right by 1 (the right-most marble moves to the left end, and everything else moves one place to the right) at a cost of R
- invert the colour of all the marbles at a cost of I

Find the number of different arrangements of blue and green marbles that can be achieved by using M or less currency units. All blue marbles are not distinguishable from each other and the same goes for green marbles. This means that if you have the arrangement `GBGBGB` and you rotate it twice to get `GBGBGB`, the original and final arrangements are indistinguishable (equivalent).

Hint: try the steps in the listed order for efficiency.

Input Specification

The first line contains two space separated integers N ($1 \leq N \leq 20$), the number of marbles and M , the amount of currency.

The second line contains four space separated integers S , L , R and I .

The third line contains a string with N characters, `B` for a blue marble or `G` for a green marble.

$$1 \leq S, L, R, I, M \leq 100$$

Note: Test cases are reasonable.

Subtask 1 [5%]

$$N \leq 5$$

Subtask 2 [5%]

$$N \leq 10$$

Subtask 3 [90%]

$$N \leq 20$$

Output Specification

A single integer - the number unique marble arrangements achievable with the amount of currency.

Sample Input 1

```
2 1
1 2 2 2
BB
```

Sample Output 1

```
3
```

Explanation for Sample Output 1

You can only afford to set the colour of one marble. Thus, you can change the colour of the first or second marble to get the possible arrangements: `BB`, `GB` and `BG`.

Sample Input 2

```
4 1
1 1 1 1
BGGG
```

Sample Output 2

```
8
```

Explanation for Sample Output 2

You can afford one of the moves. Thus, we get the following unique arrangements:

- `BGGG` original
- `GGGG` setting the first marble to green
- `BBGG` setting the second marble to blue
- `BGBG` setting the third marble to blue
- `BGGB` setting the fourth marble to blue

- GBGG rotating the marbles right once
- GGGB rotating the marbles left once
- GBBB inverting all the colours

Sample Input 3

```
5 5
3 4 4 2
BGGBB
```

Sample Output 3

```
14
```