SCHOOL COMPETITION 2010
Task ZASTAVE, 20 points
Time limit: 1 sec
Memory Limit: 128 MB
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Ante is developing a flag recognition system. After a series of filters and algorithms we get a 6×9 matrix of characters where same character denotes same color.

The system is in the initial phase of development, so Ante has set a goal to recognize simple flags like these:

```
CCCCCCCCC      CCCCCCCCC      ZZZBBBCCC      ZZZAAAZZZ
CCCCCCCCC      CCCCCCCCC      ZZZBBBCCC      ZZZAAAZZZ
BBBBBBBBB      BBBBBBBBB      ZZZBBBCCC      ZZZAAAZZZ
BBBBBBBBB      BBBBBBBBB      ZZZBBBCCC      ZZZAAAZZZ
PPPPPPPPP      CCCCCCCCC      ZZZBBBCCC      ZZZAAAZZZ
PPPPPPPPP      CCCCCCCCC      ZZZBBBCCC      ZZZAAAZZZ
```

In other words, simple flags that ante is considering consists of three equal stripes horizontally or vertically. The color on the middle stripe must differ from the colors on other two stripes.

For each matrix, we define a flag similarity measure as the minimum number of cells that need to be replaced by other characters for the matrix to become a simple flag.

Write a program that calculates a flag similarity measure for given matrix.

INPUT

Six lines contains nine upper case english letters each, the matrix.

OUTPUT

Output one integer, flag similarity measure for given matrix.

SAMPLE TEST CASES

input

```
CCCCCCCCC
CCCCCCCCC
CBBBBBBBC
PBBBBBBBP
PPPPPPPPP
PPPPPPPPP
```

output

```
4
```

input

```
AZZAAAMMA
AZZAAAMMA
ZZZAMAMMM
ZZZAAAMMM
AZZAAAMMA
AZZAAAMMA
```

output

```
9
```

input

```
TAAAOAAAT
AAAOAOAAA
OOOAAAOOO
OOOAAAOOO
AAAOAOAAA
TAAAOAAAT
```

output

```
16
```

A N×N matrix is filled with numbers 1 to N^2, diagonally in a zig-zag fashion. The illustration below shows numbers in the matrix for N = 6.

1	2	6	7	15	16
3	5	8	14	17	26
4	9	13	18	25	27
10	12	19	24	28	33
11	20	23	29	32	34
21	22	30	31	35	36

There is a rabbit in the cell containing number 1. A rabbit can jump to a neighboring cell (up, down, left or right) if that cell exists.

Given K valid rabbit jumps, write a program that will calculate the sum of numbers of all cells that rabbit visited (add the number to the sum each time rabbit visits the same cell).

INPUT

The first line contains two integers N and K (1 ≤ N ≤ 100000, 1 ≤ K ≤ 300000), the size of the matrix and the number of rabbit jumps.

The second line contains a sequence of K characters 'U', 'D', 'L' and 'R', describing the direction of each jump. The sequence of jumps will not leave the matrix at any moment.

OUTPUT

Output one integer, the sum of numbers on visited cells.

Note: This number doesn't always fit in 32-bit integer type.

SCORING

Test data worth 15 points has (1 ≤ N ≤ 1000).

SAMPLE TEST CASES

input

```
6 8
DDRRUULL
```

output

```
47
```

input

```
3 8
DDRRUULL
```

output

```
41
```

input

```
6 10
RRRRRDDDDD
```

output

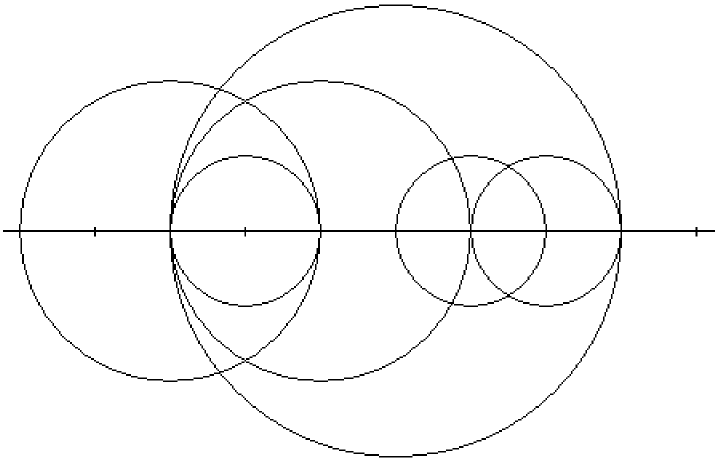
```
203
```

Clarification for the first sample: The rabbit visits cells 1, 3, 4, 9, 13, 8, 6, 2 and 1.

Clarification for the second sample: The rabbit visits cells 1, 3, 4, 8, 9, 7, 6, 2 and 1.

Clarification for the third sample: The rabbit visits cells 1, 2, 6, 7, 15, 16, 26, 27, 33, 34 and 36.

There are N circles on the coordinate axis defined by coordinate of the center C_i and radius R_i.



Write a program that will determine the smallest number of circles that have to be removed such that there is no intersecting pair of circles among the remaining circles. Remaining circles are allowed to touch at one point.

INPUT

The first line contains one integer N ($1 \le N \le 1000$), number of circles.

The next N lines contain two integers each C_i and R_i ($1 \le C_i, R_i \le 100$), coordinate of the center and radius of each circle. Two circles with the same radius will always be centered at different coordinate.

OUTPUT

Output one integer, the smallest number of circles that have to be removed such that no pair of remaining circles intersects.

SCORING

Test data worth 25 points has ($1 \le N \le 20$).

SAMPLE TEST CASES

ulaz

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

izlaz

```
2
```

ulaz

```
7
40 30
25 15
35 5
70 20
60 30
60 10
80 10
```

izlaz

```
2
```

Clarification for the first sample: If we remove (5 1) and (1 2), the remaining circles do not intersect.