Codeforces Round #308 (Div. 2)

A. Vanya and Table

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Vanya has a table consisting of 100 rows, each row contains 100 cells. The rows are numbered by integers from 1 to 100 from bottom to top, the columns are numbered from 1 to 100 from left to right.

In this table, Vanya chose n rectangles with sides that go along borders of squares (some rectangles probably occur multiple times). After that for each cell of the table he counted the number of rectangles it belongs to and wrote this number into it. Now he wants to find the sum of values in all cells of the table and as the table is too large, he asks you to help him find the result.

Input

The first line contains integer n ($1 \le n \le 100$) — the number of rectangles.

Each of the following n lines contains four integers x_1, y_1, x_2, y_2 ($1 \le x_1 \le x_2 \le 100$, $1 \le y_1 \le y_2 \le 100$), where x_1 and y_1 are the number of the column and row of the lower left cell and x_2 and y_2 are the number of the column and row of the upper right cell of a rectangle.

Output

In a single line print the sum of all values in the cells of the table.

Sample test(s)

input
```
2
1 1 2 3
2 2 3 3
```

output
```
10
```

input
```
2
1 1 3 3
1 1 3 3
```

output
```
18
```

Note

Note to the first sample test:

Values of the table in the first three rows and columns will be as follows:

121

121

110

So, the sum of values will be equal to 10.

Note to the second sample test:

Values of the table in the first three rows and columns will be as follows:

222

222

222

So, the sum of values will be equal to 18.

B. Vanya and Books

Vanya got an important task — he should enumerate books in the library and label each book with its number. Each of the n books should be assigned with a number from 1 to n. Naturally, distinct books should be assigned distinct numbers.

Vanya wants to know how many digits he will have to write down as he labels the books.

Input
The first line contains integer n ($1 \leq n \leq 10^9$) — the number of books in the library.

Output
Print the number of digits needed to number all the books.

Sample test(s)

input
13

output
17

input
4

output
4

Note
Note to the first test. The books get numbers $1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13$, which totals to 17 digits.

Note to the second sample. The books get numbers $1, 2, 3, 4$, which totals to 4 digits.

C. Vanya and Scales

Vanya has a scales for weighing loads and weights of masses w^0, w^1, w^2, ..., w^{100} grams where w is some integer not less than 2 (exactly one weight of each nominal value). Vanya wonders whether he can weight an item with mass m using the given weights, if the weights can be put on both pans of the scales. Formally speaking, your task is to determine whether it is possible to place an item of mass m and some weights on the left pan of the scales, and some weights on the right pan of the scales so that the pans of the scales were in balance.

Input

The first line contains two integers w, m ($2 \le w \le 10^9$, $1 \le m \le 10^9$) — the number defining the masses of the weights and the mass of the item.

Output

Print word `'YES'` if the item can be weighted and `'NO'` if it cannot.

Sample test(s)

input
3 7
output
YES

input
100 99
output
YES

input
100 50
output
NO

Note

Note to the first sample test. One pan can have an item of mass 7 and a weight of mass 3, and the second pan can have two weights of masses 9 and 1, correspondingly. Then $7 + 3 = 9 + 1$.

Note to the second sample test. One pan of the scales can have an item of mass 99 and the weight of mass 1, and the second pan can have the weight of mass 100.

Note to the third sample test. It is impossible to measure the weight of the item in the manner described in the input.

D. Vanya and Triangles

time limit per test: 4 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

Vanya got bored and he painted n distinct points on the plane. After that he connected all the points pairwise and saw that as a result many triangles were formed with vertices in the painted points. He asks you to count the number of the formed triangles with the **non-zero** area.

Input

The first line contains integer n ($1 \leq n \leq 2000$) — the number of the points painted on the plane.

Next n lines contain two integers each x_i, y_i ($-100 \leq x_i, y_i \leq 100$) — the coordinates of the i-th point. It is guaranteed that no two given points coincide.

Output

In the first line print an integer — the number of triangles with the non-zero area among the painted points.

Sample test(s)

input
```
4
0 0
1 1
2 0
2 2
```

output
```
3
```

input
```
3
0 0
1 1
2 0
```

output
```
1
```

input
```
1
1 1
```

output
```
0
```

Note

Note to the first sample test. There are 3 triangles formed: $(0, 0)$ - $(1, 1)$ - $(2, 0)$; $(0, 0)$ - $(2, 2)$ - $(2, 0)$; $(1, 1)$ - $(2, 2)$ - $(2, 0)$.

Note to the second sample test. There is 1 triangle formed: $(0, 0)$ - $(1, 1)$ - $(2, 0)$.

Note to the third sample test. A single point doesn't form a single triangle.

E. Vanya and Brackets

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Vanya is doing his maths homework. He has an expression of form $x_1 \diamond x_2 \diamond x_3 \diamond \ldots \diamond x_n$, where $x_1, x_2, ..., x_n$ are digits from 1 to 9, and sign $\diamond$ represents either a plus '+' or the multiplication sign '*'. Vanya needs to add **one** pair of brackets in this expression so that to maximize the value of the resulting expression.

Input

The first line contains expression s ($1 \le |s| \le 5001$, $|s|$ is odd), its odd positions only contain digits from 1 to 9, and even positions only contain signs $+$ and $*$.

The number of signs $*$ doesn't exceed 15.

Output

In the first line print the maximum possible value of an expression.

Sample test(s)

input
3+5*7+8*4

output
303

input
2+3*5

output
25

input
3*4*5

output
60

Note

Note to the first sample test. $3 + 5 * (7 + 8) * 4 = 303$.

Note to the second sample test. $(2 + 3) * 5 = 25$.

Note to the third sample test. $(3 * 4) * 5 = 60$ (also many other variants are valid, for instance, $(3) * 4 * 5 = 60$).