

Q1 Multi-capacity classroom booking

Description

The school has two departments, the Computer Science Department and the Art Center, which need to arrange suitable classrooms for different types of courses. The **Computer Science Department** offers **theory and lab classes**, each with **specific capacity** requirements. The **Art Center**, on the other hand, arranges **only art classes**. Each department provides its list of courses and corresponding capacity requirements. To ensure quality teaching, each course should be held in a classroom that matches its category and has sufficient capacity. The goal is to schedule appropriate classrooms for all departmental courses. **Output "No" if it is not possible to arrange a suitable classroom for each course, or "Yes" if a classroom has been arranged for every class in every department.**

Assumed Conditions:

- Classes are **scheduled in one time slot only**, without regard to a full day schedule.
- The classroom type must **match** the course type.
- The classroom capacity is **not less than** the course capacity requirement.
- The number of classrooms of the same type may **vary** or **same**.

Due to a bug in the system, the data storage has been **messed up**, and **the classroom information and course information have been mixed together**, but the good thing is that for the classroom information, there is an **R** as the identifier, and for the course information, there is a **C** as the identifier, and you are now required to **differentiate and organize the data first**.

Input

In each case, The first line contains an number **n** ($1 \leq n \leq 100$), represent **n** line mixed up data.

The next **n** rows, each represents a course or room information split by **,**.

- The first element marks whether it is course information or classroom information.
- The second element represents the course or classroom type, this element does not contain spaces.
- The third element represents the maximum classroom capacity or course capacity ($1 \leq num \leq 200$).

Output

No if it is not possible to arrange a suitable classroom for each course.

Yes if a classroom has been arranged for every class in every department.

Samples

Input1

```
7
R, theory, 100
R, lab, 50
C, theory, 100
R, lab, 60
C, lab, 60
R, art, 70
C, art, 60
```

Output1

Yes

Input2

```
10
R, theory, 150
R, lab, 50
C, theory, 100
R, lab, 60
C, lab, 50
R, art, 30
C, art, 40
C, art, 30
R, theory, 80
C, lab, 60
```

Output2

No

Explanation

In this case, there are 1 theory room with capacity 150 and 1 theory class with 100 course capacity requirement. So the classroom capacity satisfies the course capacity requirement. However, there is only 1 art room with capacity 30 and 1 art class with 40 course capacity requirement. For this class, there are no appropriate room. So the answer is **No**.

Q2 String Addition

Description

Given a string composed of digits and a number `k`, divide the string into multiple parts each with a length of `k`, as well as a remaining part smaller than `k`. Reverse these parts and calculate the sum of these reversed parts.

For example, string is `12345678` and `k` is 3. The string will be divided into `123`, `456`, `78`. Reverse them, we get `321`, `654`, `87`. Plus `321+654+87`, the answer is 1062.

Input

One line a string `s` composed of digits and integer `k`, separated by space. For all test cases, $1 \leq s.length \leq 100$, $2 \leq k \leq 15$.

Output

Print the sum .

Samples

Input1

```
1234567 2
```

Output1

```
136
```

Explanation

1234567 => 12, 34, 56, 7 => 21, 43, 65, 7 => 21+43+65+7 => 136

Input2

```
123345 3
```

Output2

```
864
```

Explanation

123345 => 123, 345 => 321, 543 => 321+543 => 864

Q3 Cyclone

Description

In a rectangle island where cyclones frequently occur, the island's king has divided the island into many grids, assigning each one a **distinct** number. Every cyclone always follow a fixed rotational path. Now, we need to tell the king the number of the `k`th grid that the cyclone will pass through.

As shown in the figure below, the green area represents the island, while the white areas represent non-island regions. And the cyclone is set to travel along the red arrow path starting from a given grid, potentially passing through both island and non-island regions. In this figure, grid with number 26 is the `0`th grid, and grid with number 32 is the `12`th grid. Only the green grids are counted towards the total number of grids passed through by the cyclone.


```
3 4
6 9 3 5
12 15 19 23
3 7 16 18
19 10
```

output

```
12
```