**A. Find the value**

In this problem, you are given an expression in the Infix format and you have to evaluate that expression. The expression will contain parentheses: **( )**, arithmetic operators: **\* /** **+ -**  and operands. However, the operand will contain only single digits.

**Precedence**

Highest: \* /

Lowest: + -

For same precedence make sure the expression is evaluated left to right.

**Input**

Input file contains a single line of string which represent the expression in infix format.

0 < Length of a String < 35

**Output**

Evaluate the expression.

|  |  |
| --- | --- |
| **Sample Input** | **Sample Output** |
| 1+2 | 3 |
| 5\*2+3 | 13 |
| 5\*(2+3) | 25 |
| 5/2 | 2 |

**B. Who is the Last Person**

Given N person, standing in circular order, you are playing the game of Josephus. The game is played like this. Every time you start counting up to K persons in circle from the current position. You discard the person after you finish counting. Then from that position you again start counting. This process ends, when there is only one person remaining. You start from person 1 at the beginning.

For example, for N = 5, k = 3, the process will go like below:

Begin: 1 2 3 4 5

Step1: You start from 1. 1 2 3 4 5. So you discard 3.

Step2: You start from 4 and circle back. 1 2 4 5. So you discard 1.

Step3: You start from 2. 2 4 5. So you discard 5.

Step4: You start from 2. 2 4. So you discard 2.

So the last person remaining is 4.

**Input**

Input contains, N (0<N<=2,00,000) and K (0<K<N).

**Output**

Print the last person remaining.

|  |  |
| --- | --- |
| **Sample Input** | **Sample Output** |
| 5 3 | 4 |
| 5 2 | 3 |
| 6 2 | 5 |

**C. Depth**

In this problem, you are given a string of parentheses. You have to find the maximum depth the parentheses expression have. Depth of parentheses at any moment is the number of open parentheses.

**Input**

Input file contains a single line of string.

Input string contains the following characters set: **()[]{}**.

0 < Length of a String < 200

**Output**

Print **maximum depth.**

|  |  |
| --- | --- |
| **Sample Input** | **Sample Output** |
| ()[] | 1 |
| [{()}] | 3 |
| [()][] | 2 |

**D. Arrange Them**

You are given information of N employees. Particularly you are given the Name, Department and Designation of an employee. You have to sort the employee according to Department first (increasing). Then by Designation (MD, GM, DGM, AGM, ENGR) and then by name (increasing). Use STL sort and compare function.

**Input**

Input will consist of an integer, N (1 <= N <= 105) in the first line. The next N line contains info of each student, Name (one word, no spaces, length <= 15), Department (one word, length <=15) and Designation (MD, GM, DGM, AGM, ENGR).

**Output**

Output will consist of N lines. Each line will print the students’ info separated by spaces.

|  |  |
| --- | --- |
| **Sample Input** | **Sample Output** |
| 5  A CB MD  B VAT AGM  A VAT DGM  B CB GM  B PRODUCTION ENGR | A CB MD  B CB GM  B PRODUCTION ENGR  A VAT DGM  B VAT AGM |