

Sheet #1 (Data type - Conditions)

A. Say Hello With C++

1 second🕒, 256 megabytes

Given a name S . Print "Hello, (name)" without parentheses.

Input

Only one line containing a string S .

Output

Print "Hello, " without quotes, then print name.

| input |
|-------------------|
| programmer |
| output |
| Hello, programmer |

B. Basic Data Types

1 second🕒, 256 megabytes

The following lines show some C++ data types, their format specifiers and their most common bit widths:

- **int** : 32 Bit integer.
- **long long** : 64 bit integer
- **Char** : 8 bit Characters & symbols
- **Float** : 32 bit real value
- **Double** : 64 bit real value

Reading

To read a data type, use the following syntax:

```
cin >> VariableName;
```

For example, to read a character followed by a double:

```
char ch;  
double d;  
cin >> ch >> d;
```

Printing

To print a data type, use the following syntax:

```
cout << VariableName;
```

For example, to print a character followed by a double:

```
char ch = 'd';  
double d = 234.432;  
cout << ch << " "<< d;
```

Input

Only one line containing the following space-separated values: **int**, **long long**, **char**, **float** and **double** respectively.

Output

Print each element on a **new line** in the same order it was received as input.

Don't print any extra spaces.

input

3 12345678912345 a 334.23 14049.30493

output

3
12345678912345
a
334.23
14049.3

C. Simple Calculator

1 second🕒, 256 megabytes

Given two numbers X and Y . Print the **summation** and **multiplication** and **subtraction** of these **2** numbers.

Input

Only one line containing two separated numbers X, Y ($1 \leq X, Y \leq 10^5$).

Output

Print **3** lines that contain the following in the same order:

1. " $X + Y$ = **summation** result" without quotes.
2. " $X * Y$ = **multiplication** result" without quotes.
3. " $X - Y$ = **subtraction** result" without quotes.

input

5 10

output

5 + 10 = 15
5 * 10 = 50
5 - 10 = -5

Be careful with spaces.

D. Difference

1 second🕒, 256 megabytes

Given four numbers A, B, C and D . Print the result of the following equation :

$$X = (A * B) - (C * D).$$

Input

Only one line containing 4 separated numbers A, B, C and D ($-10^5 \leq A, B, C, D \leq 10^5$).

Output

Print "Difference = " without quotes followed by the equation result.

input

1 2 3 4

output

Difference = -10

input

2 3 4 5

output

Difference = -14

input

4 5 2 3

output

Difference = 14

E. Area of a Circle

1 second🕒, 256 megabytes

Given a number R calculate the **area** of a circle using the following formula:

$$\text{Area} = \pi * R^2.$$

Note: consider $\pi = 3.141592653$.

Input

Only one line containing the number R ($1 \leq R \leq 100$).

Output

Print the calculated **area**, with **9** digits after the decimal point.

| input |
|--------------|
| 2.00 |
| output |
| 12.566370612 |

* Use the data type double for this problem.

** Use `setprecision(9)` to print 9 digits after decimal point.

*** you can use function `setprecision` that are in `#include<iomanip>` library for Example :

```
#include<iostream>
#include<iomanip>
using namespace std;
int main()
{
    cout << fixed << setprecision(9);
    // your code.
}
```

F. Digits Summation

0.25 seconds🕒, 64 megabytes

Given two numbers N and M . Print the **summation** of their **last digits**.

Input

Only one line containing two numbers N, M ($0 \leq N, M \leq 10^{18}$).

Output

Print the answer of the problem.

| input |
|--------|
| 13 12 |
| output |
| 5 |

First Example :

last digit in the first number is **3** and **last digit** in the second number is **2**.

So the answer is: $(3 + 2 = 5)$

G. Summation from 1 to N

0.25 seconds🕒, 256 megabytes

Given a number N . Print the **summation** of the numbers that is between **1** and N (**inclusive**).

$$\sum_{i=1}^N i$$

Input

Only one line containing a number N ($1 \leq N \leq 10^9$)

Output

Print the **summation** of the numbers that are between **1** and N (**inclusive**).

| input |
|--------|
| 3 |
| output |
| 6 |

| input |
|--------|
| 10 |
| output |
| 55 |

First Example :

the numbers between 1 and 3 are **1,2,3** .

So the answer is: $(1 + 2 + 3 = 6)$

Second Example :

the numbers between 1 and 10 are **1,2,3,4,5,6,7,8,9,10**.

So the answer is: $(1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55)$

H. Two numbers

1 second🕒, 256 megabytes

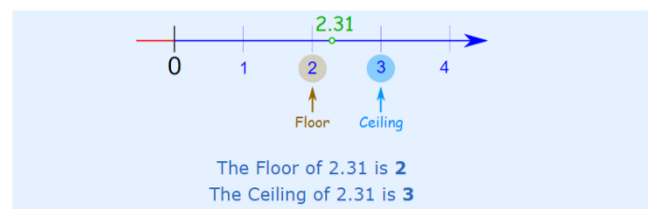
Given **2** numbers A and B . Print **floor**, **ceil** and **round** of A/B

Note:

- **Floor:** Is a mathematical function that takes a real number X and its output is the **greatest** integer **less than or equal to** X .
- **Ceil:** Is a mathematical function that takes a real number X and its output is the **smallest** integer **larger than or equal to** X .
- **Round:** Is a mathematical function that takes a real number X and its output is the **closest** integer to that number X .



The round of 7.3 is 7
The round of 7.5 is 8
The round of 7.7 is 8



For more clarification visit the links in the notes below.

Input

Only one line containing two numbers A and B ($1 \leq A, B \leq 10^3$)

Output

Print **3** lines that contain the following in the same order:

1. "floor $A / B = \text{Floor result}$ " without quotes.
2. "ceil $A / B = \text{Ceil result}$ " without quotes.
3. "round $A / B = \text{Round result}$ " without quotes.

| input |
|---|
| 10 3 |
| output |
| floor 10 / 3 = 3 ceil 10 / 3 = 4 round 10 / 3 = 3 |

| input |
|---|
| 10 4 |
| output |
| floor 10 / 4 = 2 ceil 10 / 4 = 3 round 10 / 4 = 3 |

| input |
|---|
| 10 6 |
| output |
| floor 10 / 6 = 1 ceil 10 / 6 = 2 round 10 / 6 = 2 |

Links:

- For Rounding method visit:
<https://www.mathsisfun.com/numbers/rounding-methods.html>.
- For Flooring and Ceiling method visit:
<https://www.mathsisfun.com/sets/function-floor-ceiling.html>.

I. Welcome for you with Conditions

1 second🕒, 64 megabytes

Given two numbers A and B . Print **"Yes"** if A is **greater than or equal to** B . Otherwise print **"No"**.

Input

Only one line containing two numbers A and B ($0 \leq A, B \leq 100$).

Output

Print "Yes" or "No" according to the statement.

| input |
|--------|
| 10 9 |
| output |
| Yes |

| input |
|--------|
| 5 5 |
| output |
| Yes |

| input |
|--------|
| 5 7 |
| output |
| No |

J. Multiples

1 second🕒, 256 megabytes

Given two numbers A and B . Print "Multiples" if A is **multiple** of B or **vice versa**. Otherwise print "No Multiples".

Input

Only one line containing two numbers A, B ($1 \leq A, B \leq 10^6$)

Output

Print the "Multiples" or "No Multiples" corresponding to the read numbers.

| input |
|-----------|
| 9 3 |
| output |
| Multiples |

| input |
|-----------|
| 6 24 |
| output |
| Multiples |

| input |
|--------------|
| 12 5 |
| output |
| No Multiples |

*** A is said to be Multiple of B if **B is divisible by A** .

First Example :

9 is divisible by **3** , So the answer is: Multiples.

Second Example :

6 is **not divisible** by **24** but

24 is divisible by **6** , So the answer is: Multiples.

Third Example :

12 is not divisible by **5** and **5** is not divisible by **12**.

So the answer is: No Multiples.

K. Max and Min

0.25 seconds🕒, 64 megabytes

Given 3 numbers A, B and C , Print the **minimum** and the **maximum** numbers.

Input

Only one line containing 3 numbers A, B and C ($-10^5 \leq A, B, C \leq 10^5$)

Output

Print the **minimum** number followed by a single space then print the **maximum** number.

| input |
|--------|
| 1 2 3 |
| output |
| 1 3 |

| input |
|----------|
| -1 -2 -3 |
| output |
| -3 -1 |

| input |
|----------|
| 10 20 -5 |
| output |
| -5 20 |

L. The Brothers

1 second🕒, 256 megabytes

Given two person names.

Each person has {"the first name" + "the second name"}

Determine whether they are brothers or not.

Note: The two persons are brothers if they **share the same second name**.

Input

First line will contain two Strings F_1, S_1 which donates the first and second name of the 1^{st} person.

Second line will contain two Strings F_2, S_2 which donates the first and second name of the 2^{nd} person.

Output

Print **"ARE Brothers"** if they are brothers otherwise print **"NOT"**.

| |
|---------------------------------|
| input |
| bassam ramadan ahmed ramadan |
| output |
| ARE Brothers |

| |
|--------------------------|
| input |
| ali salah ayman salah |
| output |
| ARE Brothers |

| |
|------------------------|
| input |
| ali kamel ali salah |
| output |
| NOT |

M. Capital or Small or Digit

1 second🕒, 256 megabytes

Given a letter X . Determine whether X is Digit or Alphabet and if it is Alphabet determine if it is **Capital Case** or **Small Case**.

- Note:**
- Digits in ASCII '0' = 48, '1' = 49etc
 - Capital letters in ASCII 'A' = 65, 'B' = 66etc
 - Small letters in ASCII 'a' = 97, 'b' = 98etc

Input

Only one line containing a character X which will be a capital or small letter or digit.

Output

Print a single line contains **"IS DIGIT"** if X is **digit** otherwise, print **"ALPHA"** in the first line followed by a new line that contains **"IS CAPITAL"** if X is a **capital** letter and **"IS SMALL"** if X is a **small letter**.

| |
|---------------------|
| input |
| A |
| output |
| ALPHA IS CAPITAL |

| |
|----------|
| input |
| 9 |
| output |
| IS DIGIT |

| |
|-------------------|
| input |
| a |
| output |
| ALPHA IS SMALL |

** recommended to read this to know more about ASCII Code <https://www.javatpoint.com/ascii>.

N. Char

0.25 seconds🕒, 64 megabytes

Given a letter X . If the letter is **lowercase** print the letter after converting it from **lowercase letter to uppercase letter**. Otherwise print the letter after converting it from **uppercase letter to lowercase letter**

Note : **difference between 'a' and 'A' in ASCII is 32** .

Input

Only one line containing a character X which will be a **capital** or **small** letter.

Output

Print the answer to this problem.

| |
|--------|
| input |
| a |
| output |
| A |

| |
|--------|
| input |
| A |
| output |
| a |

O. Calculator

1 second🕒, 256 megabytes

Given a mathematical expression. The expression will be one of the following expressions: $A + B$, $A - B$, $A * B$ and A / B .

Print the **result** of the mathematical expression.

Input

Only one line contains A, S and B ($1 \leq A, B \leq 10^4$), S is either (+, -, *, /).

Output

Print the **result** of the mathematical expression.

| |
|--------|
| input |
| 7+54 |
| output |
| 61 |

| |
|--------|
| input |
| 17*10 |
| output |
| 170 |

For the dividing operation you should print the division without any fractions.

P. First digit !

0.25 seconds🕒, 64 megabytes

Given a number X . Print "EVEN" if the first digit of X is **even number**. Otherwise print "ODD".

For example: In **4569** the first digit is **4**, the second digit is **5**, the third digit is **6** and the fourth digit is **9**.

Input

Only one line containing a number X ($999 < X \leq 9999$)

Output

If the first digit is even print "*EVEN*" otherwise print "*ODD*".

| |
|--------|
| input |
| 4569 |
| output |
| EVEN |

| |
|--------|
| input |
| 3569 |
| output |
| ODD |

Second Example :

In **3569** the first digit is **3** and its ODD.

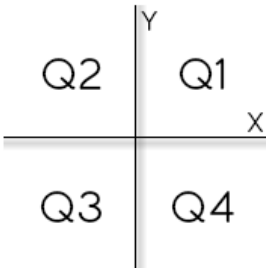
Q. Coordinates of a Point

1 second🕒, 256 megabytes

Given two numbers X, Y which donate coordinates of a point in 2D plan. Determine in which quarter does it belong.

Note:

- Print **Q1, Q2, Q3, Q4** according to the quarter in which the point belongs to.
- Print "**Origem**" If the point is at the origin.
- Print "**Eixo X**" If the point is over X axis.
- Print "**Eixo Y**" if the point is over Y axis.



Input

Only one line containing two numbers X, Y ($-1000 \leq X, Y \leq 1000$).

Output

Print the answer to problem above.

| |
|----------|
| input |
| 4.5 -2.2 |
| output |
| Q4 |

| |
|---------|
| input |
| 0.1 0.1 |
| output |
| Q1 |

R. Age in Days

1 second🕒, 256 megabytes

Given a Number N corresponding to a person's age (in days). Print his age in years, months and days, followed by its respective message "years", "months", "days".

Note: consider the whole year has **365** days and **30** days per month.

Input

Only one line containing a number N ($0 \leq N \leq 10^6$).

Output

Print the output, like the following examples.

| |
|-------------------------------|
| input |
| 400 |
| output |
| 1 years 1 months 5 days |

| |
|--------------------------------|
| input |
| 800 |
| output |
| 2 years 2 months 10 days |

| |
|-------------------------------|
| input |
| 30 |
| output |
| 0 years 1 months 0 days |

S. Interval

1 second🕒, 256 megabytes

Given a number X . Determine in which of the following intervals the number X belongs to:

[0,25], (25,50], (50,75], (75,100]

Note:

- if X belongs to any of the above intervals print "Interval " followed by the interval.
- if X **does not belong** to any of the above intervals print "**Out of Intervals**".
- The symbol '**'**' represents greater than.
- The symbol '**'**' represents smaller than.
- The symbol '**'**' represents greater than or equal.
- The symbol '**'**' represents smaller than or equal.

For example:

[0,25] indicates numbers between **0** and **25.0000**, including both.
(25,50] indicates numbers greater than **25: (25.00001)** up to **50.0000000**.

Input

Only one line containing a number X ($-1000 \leq X \leq 1000$).

Output

Print the answer to the problem above.

| |
|------------------|
| input |
| 25.1 |
| output |
| Interval (25,50] |

| |
|-----------------|
| input |
| 25.0 |
| output |
| Interval [0,25] |

| |
|-------------------|
| input |
| 100.0 |
| output |
| Interval (75,100] |

| |
|------------------|
| input |
| -25.2 |
| output |
| Out of Intervals |

T. Sort Numbers

0.25 seconds🕒, 256 megabytes

Given three numbers A, B, C . Print these numbers in ascending order followed by a blank line and then the values in the sequence as they were read.

Input

Only one line containing three numbers A, B, C ($-10^6 \leq A, B, C \leq 10^6$)

Output

Print the values in ascending order followed by a blank line and then the values in the sequence as they were read.

| |
|----------------------------------|
| input |
| 3 -2 1 |
| output |
| -2 1 3 3 -2 1 |

| |
|------------------------------------|
| input |
| -2 10 0 |
| output |
| -2 0 10 -2 10 0 |

U. Float or int

1 second🕒, 256 megabytes

Given a number N . Determine whether N is **float number** or **integer number**.

Note:

- If N is **float number** then print **"float"** followed by the **integer** part followed by **decimal** part separated by space.
- If N is **integer number** then print **"int"** followed by the **integer** part separated by space.

For more clarification see the examples below.

Input

Only one line containing a number N ($1 \leq N \leq 10^3$)

Output

Print the answer required above.

| |
|---------------|
| input |
| 234.000 |
| output |
| int 234 |

| |
|-----------------|
| input |
| 534.958 |
| output |
| float 534 0.958 |

V. Comparison

1 second🕒, 256 megabytes

Given a comparison symbol S between two numbers A and B . Determine whether it is **Right** or **Wrong**.

The comparison is as follows: $A < B, A > B, A = B$.

Where A, B are two integer numbers and S refers to the sign between them.

Input

Only one line containing A, S and B respectively ($-100 \leq A, B \leq 100$), S can be ('<', '>', '=') without the quotes.

Output

Print "Right" if the comparison is true, "Wrong" otherwise.

| |
|---------------|
| input |
| 5 > 4 |
| output |
| Right |

| |
|---------------|
| input |
| 9 < 1 |
| output |
| Wrong |

| |
|---------------|
| input |
| 4 = 4 |
| output |
| Right |

W. Mathematical Expression

0.25 seconds🕒, 256 MB

Given a mathematical expression. The expression will be one of the following expressions:

$A + B = C, A - B = C$ and $A * B = C$

where A, B, C are three numbers, S is the sign between A and B , and Q the '=' sign

Print "Yes" If the expression is **Right** , Otherwise print **the right answer of the expression**.

Input

Only one line containing the expression: A, S, B, Q, C respectively ($0 \leq A, B \leq 100, -10^5 \leq C \leq 10^5$) and S can be ('+', '-', '**') without the quotation.

Output

Output either "Yes" (without the quotation) or the right answer depending on the statement.

| |
|-------------|
| input |
| 5 + 10 = 15 |
| output |
| Yes |

| |
|-----------|
| input |
| 3 - 1 = 2 |
| output |
| Yes |

| |
|-------------|
| input |
| 2 * 10 = 19 |
| output |
| 20 |

X. Two intervals

1 second🕒, 256 megabytes

Given the boundaries of 2 intervals. Print the boundaries of their intersection.

Note: Boundaries mean the two ends of an interval which are the starting number and the ending number.

Input

Only one line contains two intervals $[l_1, r_1], [l_2, r_2]$ where $(1 \leq l_1, l_2, r_1, r_2 \leq 10^9), (l_1 \leq r_1, l_2 \leq r_2)$.

It's guaranteed that $l_1 \leq r_1$ and $l_2 \leq r_2$.

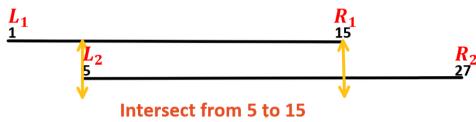
Output

If there is an **intersection** between these 2 intervals print its boundaries , otherwise print -1.

| |
|-----------|
| input |
| 1 15 5 27 |
| output |
| 5 15 |

| |
|----------|
| input |
| 2 5 6 12 |
| output |
| -1 |

First Example :



Second Example :



Y. The last 2 digits

1 second🕒, 256 megabytes

Given 4 numbers A, B, C and D . Print the **last 2 digits** from their **Multiplication**.

Input

Only one line containing four numbers A, B, C and D $(2 \leq A, B, C, D \leq 10^9)$.

Output

Print the **last 2 digits** from their **Multiplication**.

| |
|---------|
| input |
| 5 7 2 4 |
| output |
| 80 |

| |
|---------|
| input |
| 3 9 9 9 |
| output |
| 87 |

First Example :

the Multiplication of 4 numbers is $5 * 7 * 2 * 4 = 280$ so the answer will be the last 2 digits which are **80**.

Second Example :

the Multiplication of 4 numbers is $3 * 9 * 9 * 9 = 2187$ so the answer will be the last 2 digits which are **87**.

Z. Hard Compare

1 second🕒, 256 megabytes

Given 4 numbers A, B, C and D . If $A^B > C^D$ print "**YES**" otherwise, print "**NO**".

Input

Only one line containing 4 numbers A, B, C and D $(1 \leq A, C \leq 10^7), (1 \leq B, D \leq 10^{12})$

Output

Print "**YES**" or "**NO**" according to the problem above.

| |
|---------|
| input |
| 3 2 5 4 |
| output |
| NO |

| |
|---------|
| input |
| 5 2 4 2 |
| output |
| YES |

| |
|---------|
| input |
| 5 2 5 2 |
| output |
| NO |

First Example :

$3^2 = 9$ and $5^4 = 625$ then $9 < 625$ so the answer is **NO**.

Second Example :

$5^2 = 25$ and $4^2 = 16$ then $25 > 16$ so the answer is **YES**.

Third Example :

$5^2 = 25$ and $5^2 = 25$ then $25 = 25$ so the answer is **NO**.

