# Problem A. Basic Data Types

| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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**.

## Examples

| Input | Output |
| --- | --- |
| 3 12345678912345 a 334.23 14049.30493 | 3<br>12345678912345<br>a<br>334.23<br>14049.3 |

# Problem B. Simple Calculator

| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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.

## Examples

| Input | Output |
|---|---|
| 5 10 | 5 + 10 = 15<br>5 * 10 = 50<br>5 - 10 = -5 |

## Note

**Be careful with spaces.**

# Problem C. Area of a Circle

| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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

**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.

## Examples

| Input | Output |
|---|---|
| 2.00 | 12.566370612 |

## Note

* 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.
}
```

# Problem D. Summation from 1 to N

| | |
|---|---|
| **Time Limit** | 250 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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)**.

## Examples

| Input | Output |
|---|---|
| 3 | 6 |

| Input | Output |
|---|---|
| 10 | 55 |

## Note

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**)

# Problem E. Two numbers

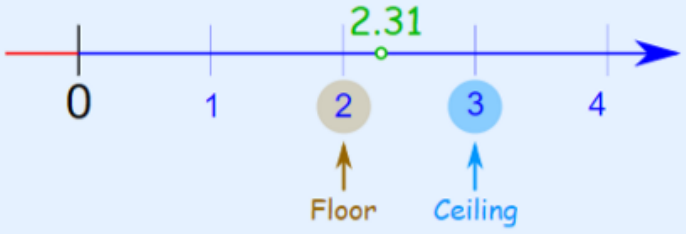
| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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**




The Floor of 2.31 is **2**
The Ceiling of 2.31 is **3**

**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 $A$ / $B$ = **Floor result**" without quotes.
2. "ceil $A$ / $B$ = **Ceil result**" without quotes.
3. "round $A$ / $B$ = **Round result**" without quotes.

## Examples

| Input | Output |
|---|---|
| 10 3 | floor 10 / 3 = 3<br>ceil 10 / 3 = 4<br>round 10 / 3 = 3 |

| Input | Output |
|---|---|
| 10 4 | floor 10 / 4 = 2<br>ceil 10 / 4 = 3<br>round 10 / 4 = 3 |

| Input | Output |
|---|---|
| 10 6 | floor 10 / 6 = 1<br>ceil 10 / 6 = 2<br>round 10 / 6 = 2 |

## Note

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.

# Problem F. Welcome for you with Conditions

| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 65536 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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.

## Examples

| Input | Output |
|---|---|
| 10 9 | Yes |

| Input | Output |
|---|---|
| 5 5 | Yes |

| Input | Output |
|---|---|
| 5 7 | No |

# Problem G. Multiples

| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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.

## Examples

| Input | Output |
|---|---|
| 9 3 | Multiples |

| Input | Output |
|---|---|
| 6 24 | Multiples |

| Input | Output |
|---|---|
| 12 5 | No Multiples |

## Note

***$A$ is said to be Multiple of $B$ if $\boldsymbol{B}$ **is divisible by** $\boldsymbol{A}$.

**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.

# Problem H. Max and Min

| | |
|---|---|
| **Time Limit** | 250 ms |
| **Mem Limit** | 65536 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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.

## Examples

| Input | Output |
|---|---|
| 1 2 3 | 1 3 |

| Input | Output |
|---|---|
| -1 -2 -3 | -3 -1 |

| Input | Output |
|---|---|
| 10 20 -5 | -5 20 |

# Problem I. Capital or Small or Digit

| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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' = 49 ....etc
- Capital letters in ASCII 'A' = 65, 'B' = 66 ....etc
- Small letters in ASCII 'a' = 97,'b' = 98 ....etc

## 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**.

## Examples

| Input | Output |
|---|---|
| A | ALPHA<br>IS CAPITAL |

| Input | Output |
|---|---|
| 9 | IS DIGIT |

| Input | Output |
| --- | --- |
| a | ALPHA<br>IS SMALL |

## Note

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

# Problem J. Char

| | |
|---|---|
| **Time Limit** | 250 ms |
| **Mem Limit** | 65536 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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.

## Examples

| Input | Output |
|---|---|
| a | A |

| Input | Output |
|---|---|
| A | a |

# Problem K. Age in Days

| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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.

## Examples

| Input | Output |
|---|---|
| 400 | 1 years<br>1 months<br>5 days |

| Input | Output |
|---|---|
| 800 | 2 years<br>2 months<br>10 days |

| Input | Output |
|---|---|
| 30 | 0 years<br>1 months<br>0 days |

# Problem L. Mathematical Expression

| | |
|---|---|
| **Time Limit** | 250 ms |
| **Mem Limit** | 262144 kB |
| **OS** | Windows |
| **Statement** | Separated Statements (en) 1Statements in PDF (en) |

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

($0 \le A, B \le 100$, $-10^5 \le C \le 10^5$) and $S$ can be ('+', '-', '*') without the quotation.

## Output

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

## Examples

| Input | Output |
|---|---|
| 5 + 10 = 15 | Yes |

| Input | Output |
|---|---|
| 3 - 1 = 2 | Yes |

| Input | Output |
| --- | --- |
| 2 * 10 = 19 | 20 |