Lab: Modules

1. Calculate Logarithm

Write a program that **prints** the calculated logarithm of **any** given number.

Input

- On the **first** line you will **receive** the **number** (an integer).
- On the **second** line you will **receive** a number, which is the **base** of the logarithm. It can be **either** a number or the word "natural".

The **output** should be **formatted** to the **2nd** decimal digit

Examples

Input	Output
10 natural	2.30

Input	Output
10 10	1.00

Hints

Use the **math** module. You can read more about it here - https://www.tutorialsteacher.com/python/math-module

1. **Import** the module:

```python
from math import log
```

2. **Read** the variables:

```python
number = int(input())
base = input()
```

3. Implement the logic:

```python
if base == "natural":
    print(f"{log(number):.2f}")
else:
    print(f"{log(number, int(base)):.2f}")
```

2. ASCII Art

Write a program that **encrypts given words** by using the characters: "-|_/\()" to structure the word. Use the **pyfiglet** module. You can read more about it here - https://www.geeksforgeeks.org/python-ascii-art-using-pyfiglet-module/

Directions

1. First you need to **install** the module that we will be using. To install it go to **Setting** --> **Project**: <your_project_name> --> **Project Interpreter** --> + --> **search for pyfiglet** --> **install package**.
2. Import the module.
3. Implement the logic. We will be using the **figlet_format** method.

Examples

Input

```
Hello World!
```

Output

```
 _   _      _ _        __        __         _     _ _ 
| | | | ___| | | ___   \ \      / /__  _ __| | __| | |
| |_| |/ _ \ | |/ _ \   \ \ /\ / / _ \| '__| |/ _` | |
|  _  |  __/ | | (_) |   \ V  V / (_) | |  | | (_| |_|
|_| |_|\___|_|_|\___/     \_/\_/ \___/|_|  |_|\__,_(_)
```

Input

```
Python 3.8
```

Output

```
 ____        _   _                   _____   ___  
|  _ \ _   _| |_| |__   ___  _ __   |___ /  ( _ ) 
| |_) | | | | __| '_ \ / _ \| '_ \    |_ \  / _ \ 
|  __/| |_| | |_| | | | (_) | | | |  ___) || (_) |
|_|    \__, |\__|_| |_|\___/|_| |_| |____(_)___/ 
       |___/                                      
```

Hints

1. First we need to **import** the module:

```
from pyfiglet import figlet_format
```

2. Then we implement the logic:

```
def print_art(msg):
    ascii_art = figlet_format(msg)
    print(ascii_art)
```

3. Lastly we **print** the message.

3. Triangle

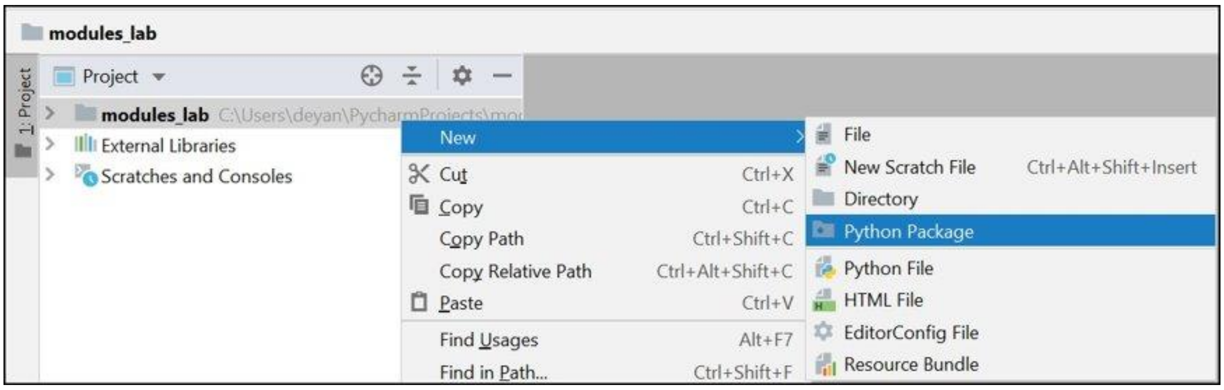
Create a **module** for printing a triangle. You will **receive** an integer **number** which is the **size** of the triangle.

Examples

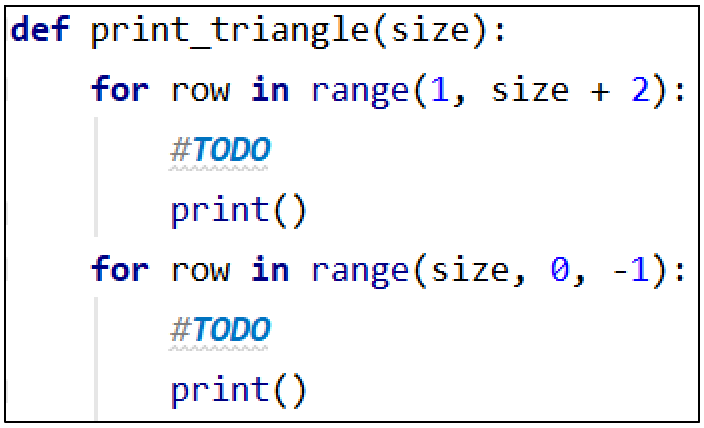
Input	Output
3	1
	1 2
	1 2 3
	1 2
	1
Input	**Output**
4	1
	1 2
	1 2 3
	1 2 3 4
	1 2 3
	1 2
	1

Hints

1. We'll start with **creating a package** called triangle:



2. Then we implement the logic. You can use 2 nested loops **one** starting from 1 and **another** starting from our limit, each printing a line per cycle:



```python
def print_triangle(size):
    for row in range(1, size + 2):
        #TODO
        print()
    for row in range(size, 0, -1):
        #TODO
        print()
```

3. And finally, **import** the module:

```
from triangle import *


size = int(input())
print_triangle(size)
```

4. Mathematical operations

Create a **module** that does basic calculations. You will **receive** 2 numbers and a sign between them all in **one string**.

Input

You will **receive** a single **string** in the following **format**:

`"{number1} {sign} {number2}"`

- **number1 –** a float number in the range (0.0, 1000.0)
- **sign –** a char that can be:
  '/' - divide the first number with the second
  '*' - multiply the 2 numbers
  '-' - subtract the first number with the second
  '+' - add the 2 numbers
  '^' - raise the first number to the second
- **number2 –** an integer number in the range (0, 1000)

Output

Print only the **result** of the operation.

The result should be **formatted** to the **second** decimal point.

Examples

Input	Output
`2.5 * 2`	`5.00`
Input	**Output**
`6.66 ^ 2`	`44.35`
Input	**Output**
`36.66 / 6`	`6.11`

5. Fibonacci Sequence

Create a **module** that can **create** a **Fibonacci sequence** up to a number (**count of numbers in the sequence**) and **print** them, separating them with a **single space**. The module should also be able to **locate a specific number** in the sequence. You can **read** more about the Fibonacci sequence **here**: https://en.wikipedia.org/wiki/Fibonacci_number

You will be receiving **commands** until the "**Stop**" command. The commands are:

- `"Create Sequence {count}"`. Create series of numbers up to a specific **count** and **print** them in the **following format**:

  `"{n1} {n2} … {n}"`

- `"Locate {number}"`
  Check if the sequence **contains** the number.If it **finds** the number it should **print**:

  `"The number - {number} is at index {index}"`

  And if it **doesn't find** it:

  `"The number {number} is not in the sequence"`

Input

- You will be receiving **commands** until the `"Stop"` command. All inputs will be **valid**.

Output

- **Print** the **output** of every **command** in the **format described above**.

Examples

Input	Output

`Create Sequence 10`
`Locate 13`
`Create Sequence 3`
`Locate 10`
	`0 1 1 2 3 5 8 13 21 34`
	`The number - 13 is at index 7`
	`0 1 1`
	`The number 10 is not in the sequence`