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 **logarithm base**. 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:

```
from math import log
```

2. **Read** the variables:

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

3. Implement the logic:

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

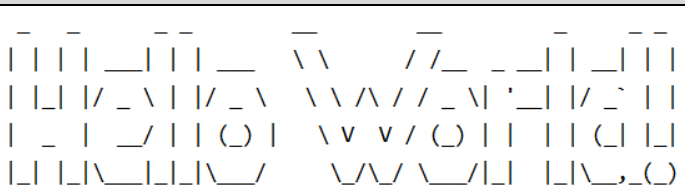
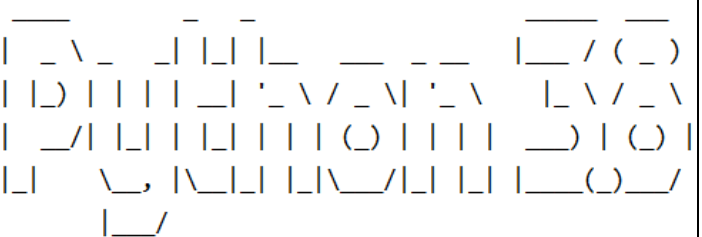
2. ASCII Art

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	Output
Hello World!	
Input	**Output**
Python 3.8	

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

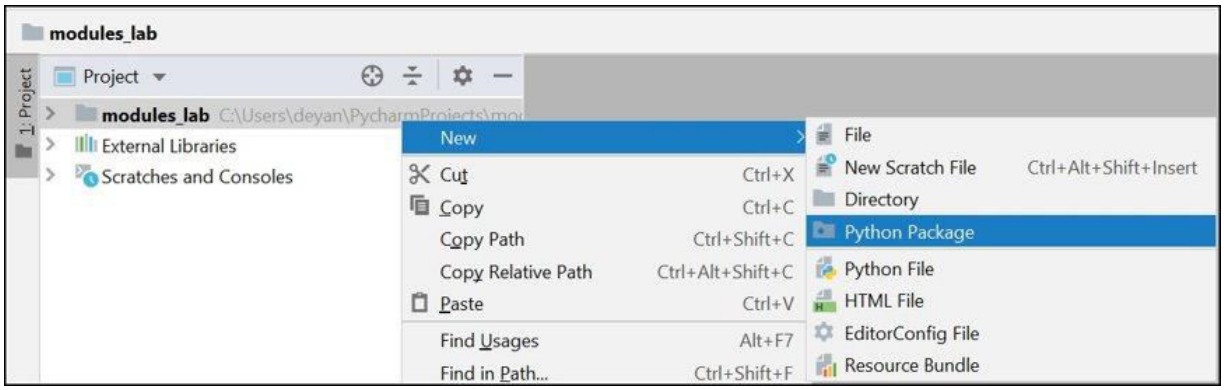
Create a **module** for printing a triangle. You will **receive** an integer **number** which is the **size** of the triangle.

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

```
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 a 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 Stop	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