

Lab: First Steps in OOP

This document defines the exercises for the ["Python OOP" course at @Software University](#).

Please submit your solutions (source code) to all the below-described problems in [Judge](#).

1. Rhombus of Stars

Create a program that reads a **positive integer N** as input and prints on the console a **rhombus** with size **n**:

Examples

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

2. Scope Mess

Fix the code below, so it returns the expected output. Submit the fixed code in the judge system.

```
x = "global"

def outer():
    x = "local"

    def inner():
        x = "nonlocal"
        print("inner:", x)

    def change_global():
        x = "global: changed!"

    print("outer:", x)
    inner()
    print("outer:", x)
    change_global()

print(x)
outer()
print(x)
```

Examples

Current Output	Expected Output
global outer: local inner: nonlocal outer: local global	global outer: local inner: nonlocal outer: nonlocal global: changed!

3. Class Book

Create a class called **Book**. It should have an `__init__()` method that should receive:

- **name:** string
- **author:** string
- **pages:** int

Submit only the class in the judge system.

Examples

Test Code	Output
book = Book("My Book", "Me", 200) print(book.name) print(book.author) print(book.pages)	My Book Me 200

4. Car

Create a class called **Car**. Upon initialization, it should receive a **name**, **model**, and **engine** (all strings). Create a method called **get_info()** which will return a string in the following format:

"This is {name} {model} with engine {engine}".

Examples

Test Code	Output
<pre>car = Car("Kia", "Rio", "1.3L B3 I4") print(car.get_info())</pre>	This is Kia Rio with engine 1.3L B3 I4

5. Music

Create a class named **Music** that receives **title (string)**, **artist (string)**, and **lyrics (string)** upon initialization. The class should also have two additional methods:

- The **print_info()** method should return the following: 'This is "{title}" from "{artist}"'
- The **play()** method should return the lyrics.

Submit **only the class** in the judge system. **Test your code** with your examples.

Examples

Test Code	Output
<pre>song = Music("Title", "Artist", "Lyrics") print(song.print_info()) print(song.play())</pre>	This is "Title" from "Artist" Lyrics