OBJECT ORIENTED PROGRAMMING

LAB TASK 2

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SEMESTER: 2ND

SECTION: C

SUBJECT: Object Oriented Programming

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Functions in Python

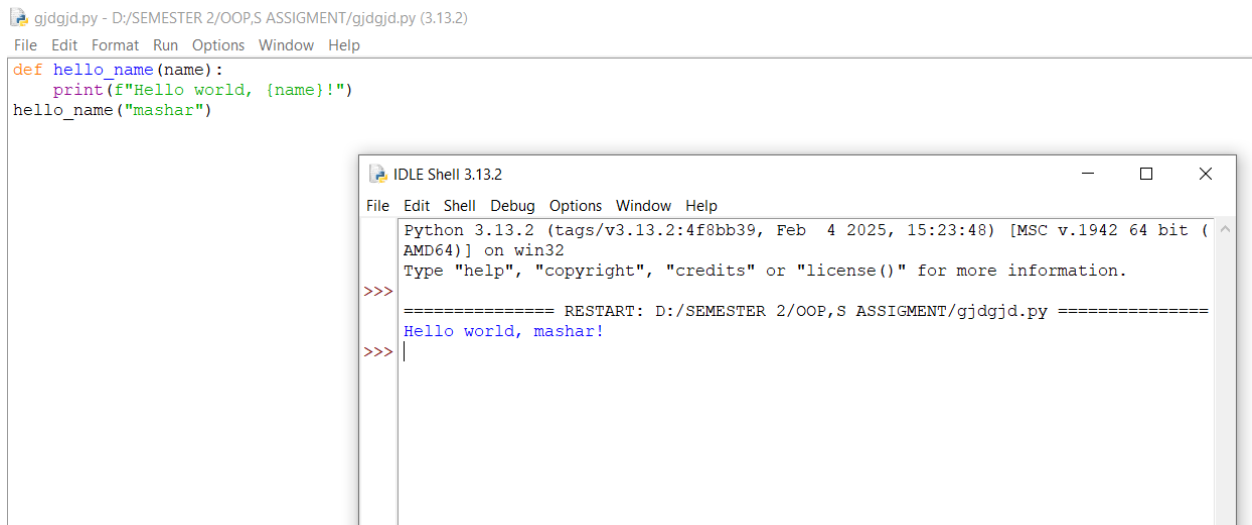## Part 1: Introduction to Functions

What is a Function?

A function is a block of reusable code that performs a specific task. Functions help in organizing code and improving reusability.

Defining a Function

A function is defined using the def keyword. # Example def greet(): print("Hello, World!") greet() # Calling the function

Exercise 1:

Write a function hello_name that takes a name as an argument and prints "Hello, !".

```
gjdgjd.py - D:/SEMESTER 2/OOP,S ASSIGMENT/gjdgjd.py (3.13.2)
File  Edit  Format  Run  Options  Window  Help
def hello_name(name):
    print(f"Hello world, {name}!")
hello_name("mashar")
```

```
IDLE Shell 3.13.2                                          —    □    ×
File  Edit  Shell  Debug  Options  Window  Help
    Python 3.13.2 (tags/v3.13.2:4f8bb39, Feb  4 2025, 15:23:48) [MSC v.1942 64 bit (
    AMD64)] on win32
    Type "help", "copyright", "credits" or "license()" for more information.
>>>
    =============== RESTART: D:/SEMESTER 2/OOP,S ASSIGMENT/gjdgjd.py ===============
    Hello world, mashar!
>>>
```

Part 2: Function Arguments

Positional and Keyword Arguments

Functions can have parameters that receive values when called.

Positional Arguments

def add(a, b):

return a + b

Keyword Arguments

print(add(a=3, b=5))

Default Parameters

Default value for a parameter

def power(base, exp=2):

return base ** exp

print(power(3)) # Uses default exp=2
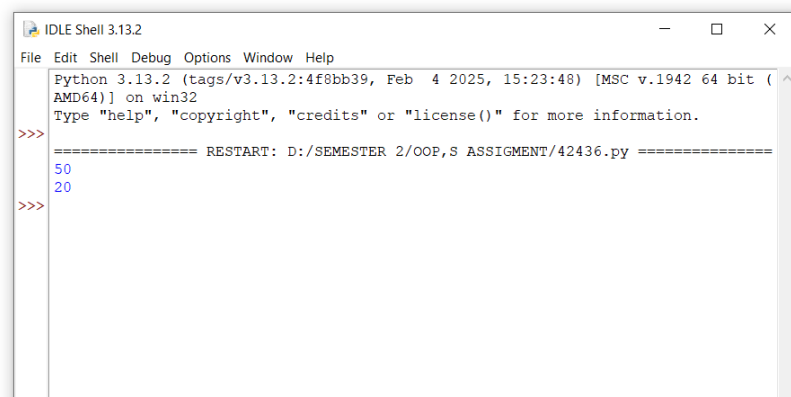
print(power(3, 3))

Exercise 2:

Write a function calculate_area that takes length and width as arguments and returns the area of a rectangle. The width should have a default value of 10.

```
*42436.py - D:/SEMESTER 2/OOP,S ASSIGMENT/42436.py (3.13.2)*
File  Edit  Format  Run  Options  Window  Help
def calculate_area(length, width=10):
    return length * width
print(calculate_area(5))
print(calculate_area(5, 4)
```

```
IDLE Shell 3.13.2                                              —    □    ×
File  Edit  Shell  Debug  Options  Window  Help
Python 3.13.2 (tags/v3.13.2:4f8bb39, Feb  4 2025, 15:23:48) [MSC v.1942 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
================ RESTART: D:/SEMESTER 2/OOP,S ASSIGMENT/42436.py ================
50
20
>>>
```

Part 3: Return Values

A function can return a value using the return keyword.

def square(num):

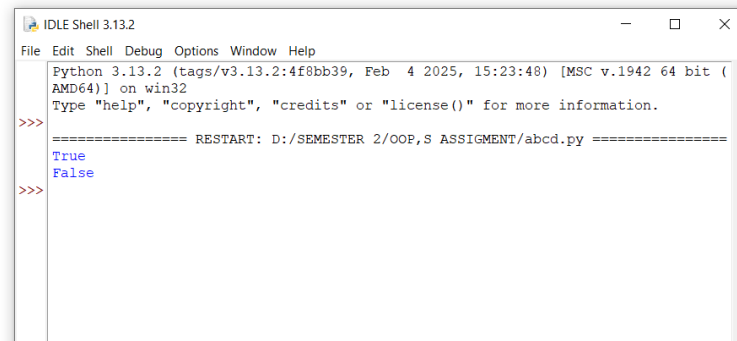 return num * num

result = square(4)

 print(result) # 16

Exercise 3:

Write a function is_even that returns True if a given number is even and False otherwise.

Part 4: Variable Scope

Local and Global Variables

Variables defined inside a function are local, while those outside are global.

 global_var = "I am global"

def my_function():

local_var = "I am local"

 print(global_var)

print(local_var)

 my_function()

print(global_var)

print(local_var) # This will cause an error

Exercise 4:

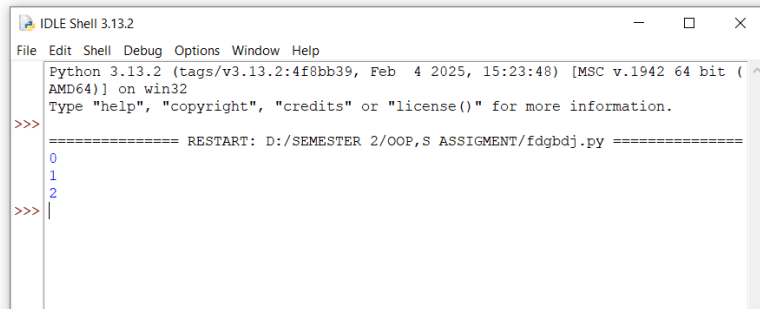Create a function that modifies a global variable inside a function using the global keyword.

```
fdgbdj.py - D:/SEMESTER 2/OOP,S ASSIGMENT/fdgbdj.py (3.13.2)
File  Edit  Format  Run  Options  Window  Help
# Define a global variable
counter = 0

def increase_counter():
    global counter  # Declare that we are using the global variable
    counter += 1  # Modify the global variable

# Example usage
print(counter)  # Output: 0
increase_counter()
print(counter)  # Output: 1
increase_counter()
print(counter)  # Output: 2
```

```
IDLE Shell 3.13.2                                                  —    □    ×
File  Edit  Shell  Debug  Options  Window  Help
    Python 3.13.2 (tags/v3.13.2:4f8bb39, Feb  4 2025, 15:23:48) [MSC v.1942 64 bit (
    AMD64)] on win32
    Type "help", "copyright", "credits" or "license()" for more information.
>>>
    =============== RESTART: D:/SEMESTER 2/OOP,S ASSIGMENT/fdgbdj.py ===============
    0
    1
    2
>>>
```