Module: Python Functions

Introduction to Functions, its various functionalities, and examples

Introduction

Python functions are reusable pieces of code that perform specific tasks. They allow for modular and organized programming, thereby making it easier to build, maintain, and scale large software projects. As a cornerstone of Python programming, understanding functions is essential for anyone venturing into the field of Data Science or AI. This guide aims to provide a comprehensive introduction to Python functions, specifically tailored for beginners.
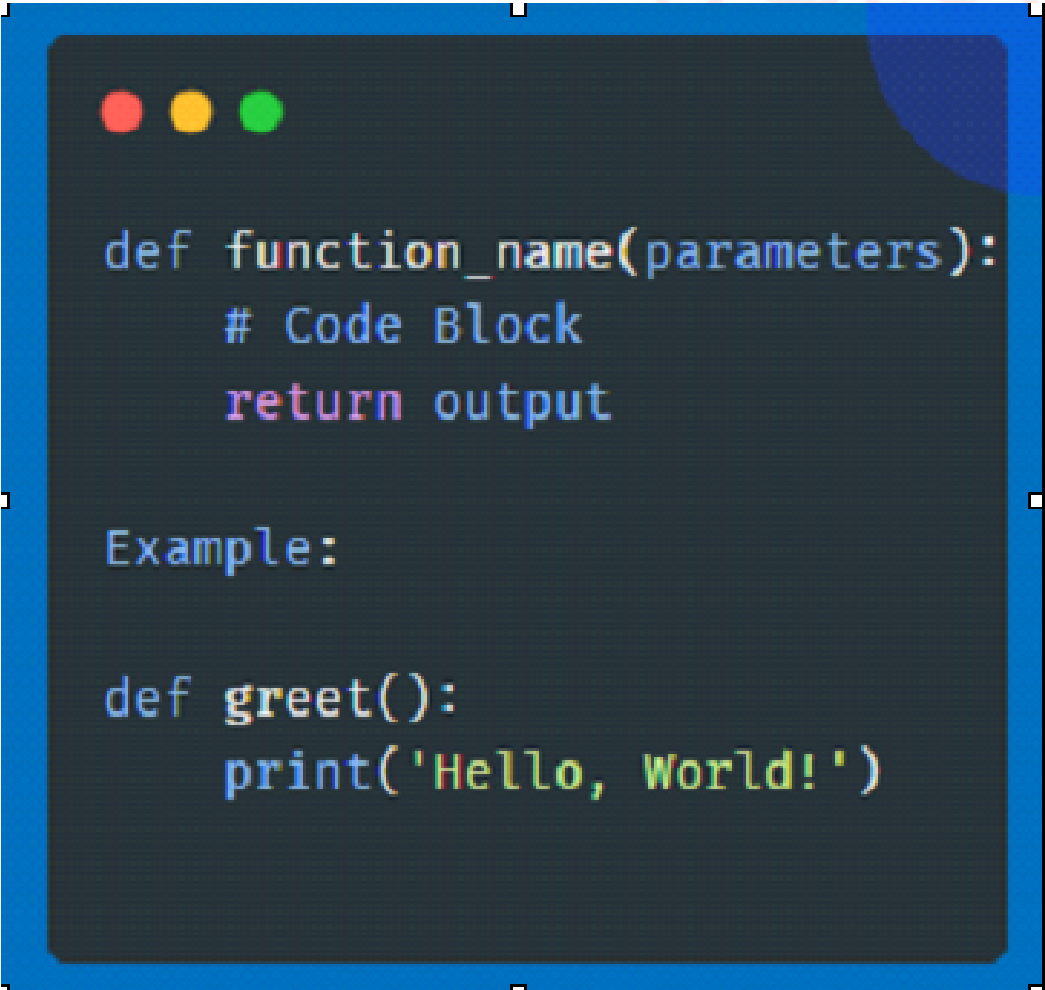
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1. What is a Function?

A function is a block of organized, reusable code that performs a specific task. Functions provide better modularity and facilitate code reusability.

Code Snippet:

```python
def function_name(parameters):
    # Code Block
    return output


Example:


def greet():
    print('Hello, World!')
```

2. Why Use Functions?

Modularity: Break down complex tasks into smaller, manageable sub-tasks.
-*Reusability*: Write code once and use it in multiple places.
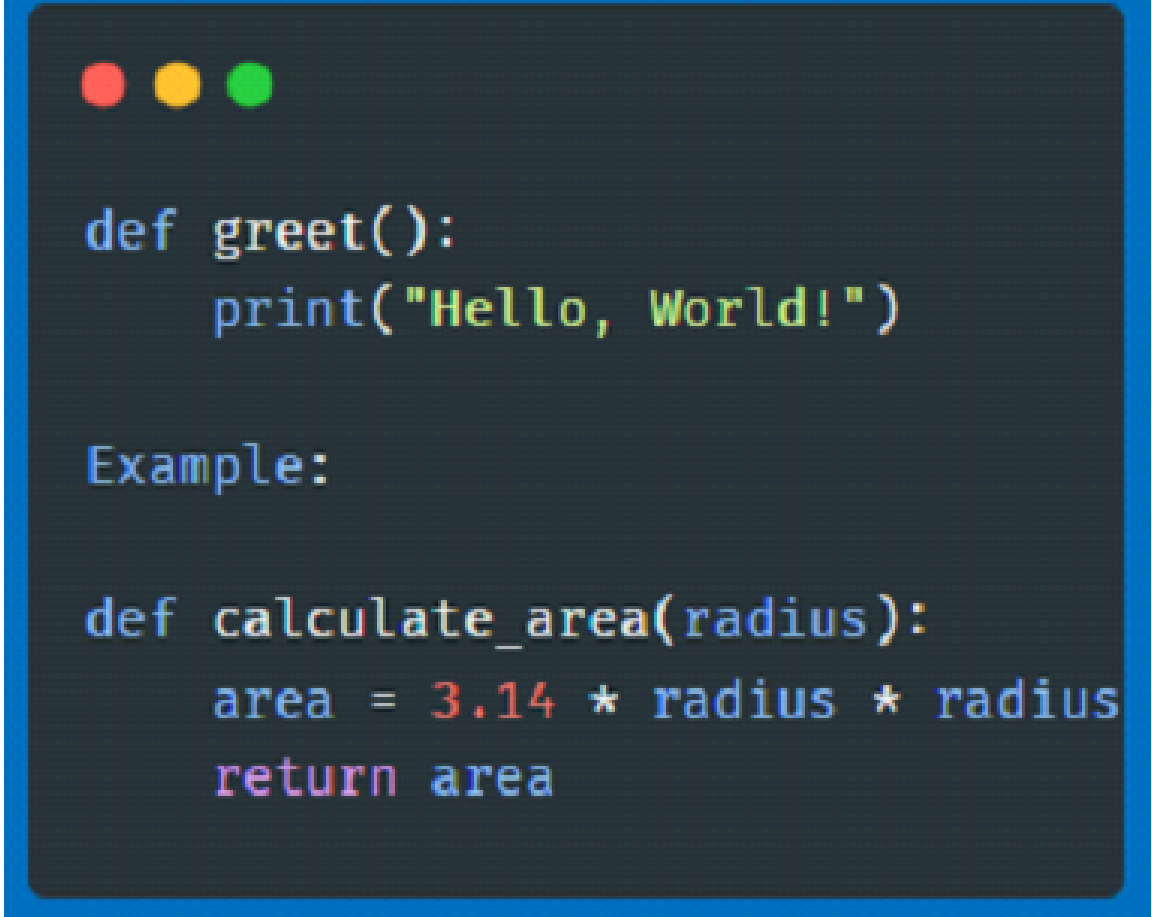*Maintainability*: Easier to update and debug.

Example:

Instead of writing the same sorting algorithm in multiple places, you can write a `sort_list` function and reuse it.

3. Defining a Function

To define a function, you use the `def` keyword followed by the function name and parentheses ().

Code Snippet:

```python
def greet():
    print("Hello, World!")

Example:

def calculate_area(radius):
    area = 3.14 * radius * radius
    return area
```
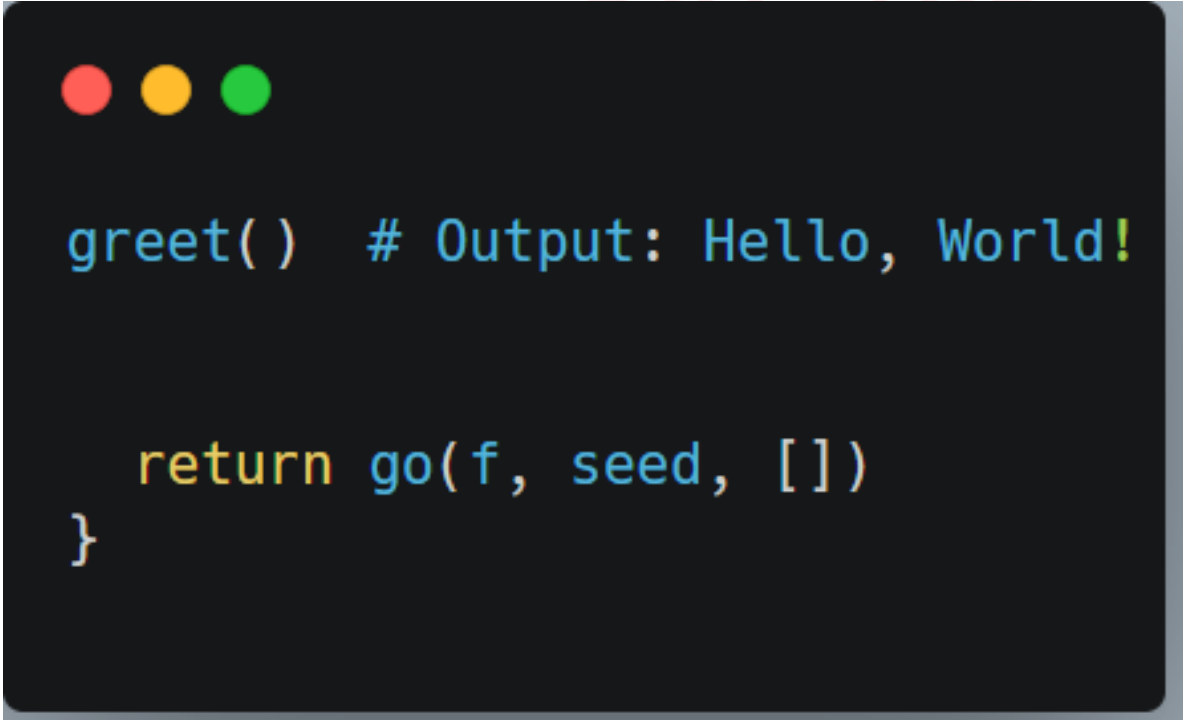
4. Calling a Function

After defining a function, you can 'call' it to execute the code it contains.

Code Snippet:

```
greet()  # Output: Hello, World!


    return go(f, seed, [])
}
```

5. Function Parameters

You can pass data known as parameters into a function.

Code Snippet:

```python
def greet(name):
    print(f"Hello, {name}!")
```

```python
greet("Alice")  # Output: Hello, Alice!
```

6. Return Statement

Functions can return values using the `return` statement.

Code Snippet:

```python
def add(a, b):
    return a + b
```

Calling function and storing returned value:

```python
result = add(5, 3)  # result = 8
```

7. Variable Scope

Variables declared inside a function are not accessible from outside the function.

Code Snippet:

```python
def my_function():
    inside_var = "I'm inside!"
```
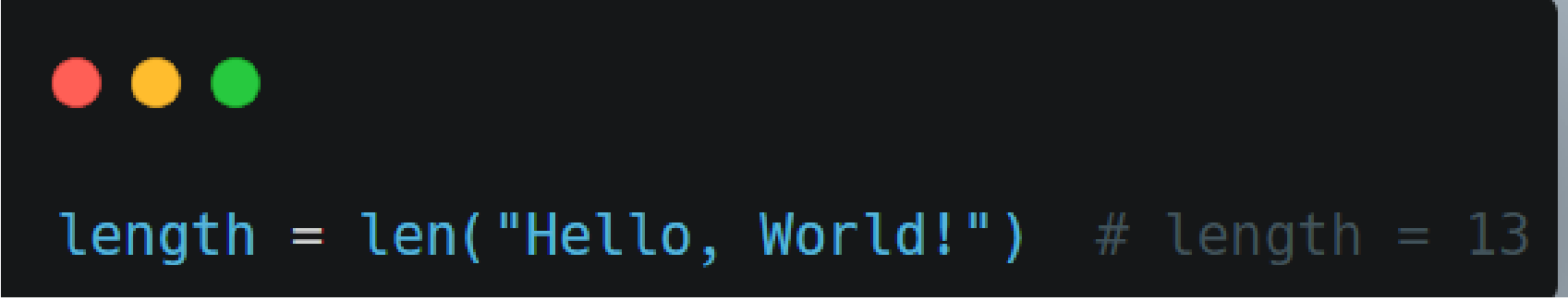
This will throw an error

```python
# print(inside_var)  #
```

8. Built-in Functions

Python provides several built-in functions like `print()`, `len()`, `type()`, etc.

Code Snippet:

```python
length = len("Hello, World!")  # length = 13
```

9. Lambda Functions

These are small anonymous functions defined with the `lambda` keyword.

Code Snippet:

```python
multiply = lambda x, y: x * y
```

Calling lambda function:

```python
result = multiply(3, 4)  # result = 12
```

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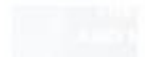✅ Python Projects Videos
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