

Functions and Scopes in Python

Introduction to Functions

Functions in Python are reusable blocks of code that perform a specific task. They improve code modularity and reduce redundancy. Python functions are defined using the 'def' keyword followed by a function name and parentheses.

Types of Functions

1. Built-in Functions

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

2. User-defined Functions

Users can define their own functions using the 'def' keyword.

3. Lambda Functions

Anonymous functions are defined using the `lambda` keyword and are typically used for short, single-use operations.

Scope of Variables

1. Local Scope

A variable declared inside a function is local to that function and cannot be accessed outside it.

2. Global Scope

A variable declared outside all functions is globally accessible throughout the program.

3. Nonlocal Scope

A variable inside a nested function can be accessed using the 'nonlocal' keyword, allowing it to be modified in the parent function.

Best Practices

- Use meaningful function names.
- Keep functions short and focused on a single task.
- Use docstrings to explain the purpose of functions.
- Avoid modifying global variables inside functions.