Programming in Python

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Description

This comprehensive textbook, The Complete Guide to Programming in Python, is a foundational resource designed to transform absolute beginners into proficient Python developers. The core theme of the book is simplicity meets versatility: Python's global popularity is rooted in its highly readable syntax and its powerful application across diverse fields like web development, data science, and automation.

The book's primary purpose is to deliver a systematic, hands-on learning experience. It begins by establishing the fundamentals—such as the easy-to-understand syntax, diverse expression types, and key data structures like Numeric, Sequence (Lists, Tuples), and Mapping (Dictionaries)—before seamlessly progressing to advanced topics. Readers will master essential control flow techniques, including conditional statements (if/elif/else, match-case) and iterative loops (for/while), and learn to structure complex code using Object-Oriented Programming (OOP) principles (Inheritance, Polymorphism). The practical value is reinforced by specialized units on handling errors through robust exception handling, interacting with the PyMongo database, and building visually appealing applications using Tkinter. The target audience includes students in computer science, newcomers to programming, and professionals from any domain who require a solid, application-focused grounding in one of the world's most demanded programming languages.

Salient Features:

• Foundational Syntax Mastery: An ideal starting point covering all of Python's core features, from its easy-to-understand syntax and diverse expression types (Arithmetic, Logical) to detailed rules for operator precedence.

• Comprehensive Data Structures: A dedicated section that thoroughly explores all built-in data types: Numeric (int, float), Sequence (list, tuple, string), Mapping (dict), and Set types, complete with practical code implementations.

• Control Flow and Logic: Offers full coverage of flow control mechanisms, from basic if-else and nested conditions to the modern match-case statement, ensuring the ability to write robust program logic.

• Essential Built-in Functions: Provides an extensive, tabulated reference of over 50 vital built-in functions, each accompanied by practical code snippets demonstrating its correct usage and return value.

• OOP Principles Explained: Delivers clear, practical instruction on Object-Oriented Programming, covering Inheritance, Polymorphism (Overriding, Overloading), and Data Abstraction using Python-specific examples.

• Ecosystem and Libraries: Introduces the vast Python ecosystem, detailing how to create and use custom modules and presenting key external libraries like NumPy and Pandas for data manipulation.

• GUI Application Development: Step-by-step guidance on creating rich Graphical User Interfaces (GUIs) using the standard Tkinter library, thoroughly covering layout managers and all essential widgets.

• Practical Database Integration: Hands-on instruction for connecting to and performing full CRUD (Create, Read, Update, Delete) operations on a NoSQL database, specifically using the PyMongo library for MongoDB.

About the Author(s)

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