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Fundamentals of Python Programming

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Product Description

PROGRAMMING IN PYTHON is an essential, comprehensive resource designed to guide readers from foundational concepts to advanced application development in the world's most versatile programming language. The book's core purpose is to leverage Python's interpreted, high-level nature, which prioritizes readability and ease of use, making complex coding accessible to everyone. It systematically introduces the easy-to-understand syntax and covers crucial programming paradigms, including structured programming, working with data types, expressions, operator precedence, and robust Object-Oriented Programming (OOP) principles like Inheritance, Polymorphism, and Abstraction.

Beyond the fundamentals, this guide provides practical value by diving into the extensive Python ecosystem. Readers will learn to utilize major libraries like NumPy and Pandas for efficient data analysis, explore building Graphical User Interfaces (GUI) using the built-in Tkinter library, and establish database connectivity using PyMongo for MongoDB. Given Python's widespread use in web development, data science, artificial intelligence, and automation, this book is perfectly suited for a wide audience. It is an ideal textbook for students and newcomers seeking to master a powerful first language, and a valuable reference for professionals and developers looking to harness Python for real-world projects and demanding industry roles. Salient Features:

• Foundational Syntax Mastery: Provides a thorough understanding of Python's fundamental building blocks, covering basic data types, complex expressions, operator precedence, and essential control flow statements like if/else and for/while loops.

• Object-Oriented Paradigms: Explores core OOP concepts, including Inheritance, Encapsulation, and Polymorphism (method and operator overloading), with a focus on implementing Abstraction using the ABC module.

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• Data Analysis Libraries: Features detailed chapters on NumPy for efficient numerical array operations and Pandas for structured data manipulation, equipping the reader with crucial skills for data science roles.

• Interactive GUI Development: Guides the reader through creating graphical applications using the built-in Tkinter library, covering essential widgets, layout managers, and handling various user events and bindings.

• Database Connectivity: Introduces practical NoSQL database integration using the PyMongo library. Learn to connect, insert, query, update, and manage documents and entire collections in MongoDB.

• Ecosystem and Tools: A comprehensive reference to Python's rich set of built-in functions, alongside instructions for creating and importing custom modules and managing dependencies using the pip tool.

• Control Flow Structures: Detailed explanation of all sequential control structures, from traditional if-elif-else statements to modern Python match-case statements, for managing program flow efficiently.

• Real-World Applications: Showcases Python's versatility across multiple domains, including scripting for automation, scientific computing, and leveraging major frameworks for modern web development like Django/Flask

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