Python Tutorial

From Basics to Advanced Applications

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2025-05-24

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Python Tutorial

Welcome to the comprehensive Python programming tutorial by **Ameyanagi**. This tutorial covers Python from basics to advanced applications, with support for multiple languages and formats.

Tutorial Features

- **Multi-format Learning**: Books, slides, and interactive content
- **Bilingual Support**: English and Japanese versions
- **Comprehensive Coverage**: From Python basics to data science
- **Modern Development**: Using uv, VS Code, and best practices
- **Real-world Applications**: Practical projects and examples

Available Formats

Books (Comprehensive Guides)

English Version

Complete Python tutorial with 12 chapters covering: - Environment setup and Git integration - Python syntax and data structures
- Functions and error handling - Object-oriented programming - Advanced topics (async, type hints) - Real-world applications (data science, web development)

Read English Book →

Japanese Version ( )

Python - 12 : - Git - Python -
- - - Web

→

Slides (Interactive Presentations)

Perfect for lectures, workshops, and quick learning sessions:

Core Concepts

- Data Types & Collections
- Control Flow
- Functions
- Error Handling

Code Organization

- Modules & Packages
- Classes & Objects
- Inheritance

Advanced Topics

- Type Hints
- Data Science

Development Environment

This tutorial teaches modern Python development using:

- **uv**: Modern Python package manager
- **VS Code**: Integrated development environment
- **ruff**: Fast Python linter and formatter
- **pyright**: Static type checker
- **Git**: Version control integration
- **Quarto**: Multi-format publishing

Learning Path

Beginners

1. Start with Environment Setup
2. Learn Git & GitHub
3. Master Python Syntax
4. Practice with Data Types

Intermediate

1. Understand Control Flow
2. Learn Functions
3. Complete Self-Review
4. Explore Object-Oriented Programming

Advanced

1. Master Inheritance
2. Use Type Hints
3. Learn Async Programming
4. Apply Data Science

Quick Start

For Self-Study

- Choose your preferred language (English/Japanese)
- Follow the learning path sequentially
- Complete exercises in each chapter
- Build the capstone projects

For Instructors

- Use slides for classroom presentations
- Assign book chapters for reading
- Leverage built-in exercises and self-review sections
- Adapt content for your curriculum

For Developers

- Jump to specific topics you need
- Use as a reference guide
- Follow best practices demonstrated
- Integrate modern tooling into your workflow

Code Examples

All code examples are: - **Tested and verified** - **Copy-paste ready** - **Following best practices** - **Progressively complex**

Contributing

This tutorial is open source and welcomes contributions:

- Report issues
- Suggest improvements

- Help with translations
- Add examples and exercises

Contribute on GitHub →

Responsive Design

This tutorial works perfectly on: - Desktop computers - Mobile devices - Tablets - Projectors (for slides)

Latest Updates

- **Comprehensive slide presentations** for interactive learning
- **Japanese translations** for key chapters
- **Data science applications** with real-world examples
- **Modern tooling integration** (uv, ruff, pyright)
- **Type hints coverage** for robust code development

Ready to start your Python journey?

Choose your learning format and begin today!

Start with Books View Slides

Built with by Ameyanagi using Quarto, Python, and modern development tools.

Part I

Language Versions

Python Tutorial

Welcome to the comprehensive Python tutorial! This book will take you from Python basics to advanced applications.

What You'll Learn

This tutorial is designed for mixed skill levels and covers:

- **Environment Setup** - uv, poetry, miniforge, Git/GitHub, VS Code
- **Python Basics** - Syntax, data types, control flow, functions

- **Object-Oriented Programming** - Classes, inheritance, advanced patterns
- **Advanced Topics** - Type hints, async programming, multiprocessing
- **Real Applications** - Data science, automation, web development

Tutorial Features

- **Interactive Examples** - Code with execution output
- **Exercises & Quizzes** - Test your understanding
- **Hands-on Projects** - Build real applications
- **Multiple Formats** - Book, slides, PDF
- **Bilingual** - Available in English and Japanese

Prerequisites

- Basic computer literacy
- Willingness to learn and experiment
- Python 3.12+ (we'll help you install it!)

How to Use This Tutorial

1. **Linear Learning** - Follow chapters in order for best results
2. **Practice Code** - Run every example yourself
3. **Complete Exercises** - Reinforce your learning
4. **Build Projects** - Apply knowledge to real problems

Book Chapters

Ready to start your Python journey? Let's begin with Environment Setup!

Interactive RevealJS Slides

Professional presentation slides with full navigation controls:

Core Python Concepts

- Introduction & Setup - Get started with Python and uv
- Data Types & Collections - Lists, dictionaries, sets
- Control Flow - If/else statements, loops
- Functions - Reusable code blocks
- Error Handling - Try/except patterns

Code Organization

- Modules & Packages - Code organization
- Classes & Objects - Object-oriented programming
- Inheritance - Advanced OOP concepts
- Type Hints - Modern Python typing

Advanced Applications

- Data Science - NumPy, Pandas, Machine Learning
- IoT Connectivity - Serial, Modbus, InfluxDB

RevealJS Features:

- **Navigation**: Arrow keys, mouse clicks, touch gestures
- **Shortcuts**: `ESC` (overview), `F` (fullscreen), `S` (speaker view)
- **Interactive**: Chalkboard (`B` key), Menu, Progress bar

Python

Python Python

- - uv poetry miniforge Git/GitHub VS Code
- **Python** -
- -
- -
- - Web

- -
- -
- -
- - PDF
- -

-
-
- Python 3.12+

1. -
2. -
3. -
4. -

Python

RevealJS

- - Python uv
- -
- -
- IoT - Modbus InfluxDB

RevealJS :

- :
- : `ESC` ( ), `F` ( ), `S` ( )
- : (`B`)

:

- (if/else)
-
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-
-
-
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Looking for the English version? Access the English version here